

MILLS (C.K.)

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AND OTHER AFFECTIONS OF SPEECH,  
IN SOME OF THEIR MEDICO-LEGAL  
RELATIONS, STUDIED LARGELY  
FROM THE STANDPOINT OF LOCALI-  
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BY CHARLES K. MILLS, M. D.,

Professor of Diseases of the Mind  
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Woman's Medical College of Phila-  
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For many years, and especially since Broca in 1861 located the seat of articulate language in the left third frontal convolution, aphasia and other affections of speech from disease of the brain, have received the close attention of the ablest physicians interested in the nervous system and its diseases. For a long time the eyes of these observers and investigators were too intently fixed on the convolution of Broca, and in consequence, advance in the comprehension of the nature of speech and its disorders was much retarded; but their view enlarged; and experiment, clinical study, and well recorded autopsies, soon showed that the faculty of speech could not be limited to a single small centre or area in the motor region of the brain, but that large zones, or a complexity of centres, both on the receptive and the emissive sides of the cerebrum, must necessarily be concerned. Since even the partial recognition of this truth the literature of the pathology and mechanism of speech has been rapidly enriched; and our understanding of aphasia and affections

of speech in general, not long ago clouded by narrow or biased views as to localization, has become clearer and more practical.

The nations speaking the three great languages which dominate the world—English, French, and German—have each contributed a fair share of facts and theories to elucidate the interwoven problems of mind and speech; and every physician practically interested in these problems—for the ends of ordinary diagnosis and treatment, for the purpose of surgical operations, for expert work in the courts or elsewhere—should know something of the published work of the Ogles, Broadbent, Bastian, Bateman, Wilks, Gairdner, Hughlings-Jackson, Ferrier, and Ross; of Hun, Seguin, Wilbur, Amidon, Putnam-Jacobi and Starr; of Broca, Trousseau, Baillarger, Bernard, Falret, Legrand du Saulle and Charcot; of Spamer, Wernicke, Kussmaul, Kahler, Pick, Benedikt, Berlin, and Wilbrand.

In spite of the achievements of these and others, much with reference to the nature of speech remains to be learned, and not a few important points are yet in dispute, but knowledge of the subject is now sufficiently systematized and certain to promise some success in shaping it to such a practical purpose as the solution of questions of mental capacity and competency in those who suffer from speech deprivation or disorder. The medico-legal aspects of aphasia and of other affections of speech have not escaped investigation and discussion, but they have received but little attention from English and American writers, and compared with the immense literature of the general subject of aphasia, but little from the writers of other nations. Much of the work which has been published has been in the



nature of a record, with comment, of particular cases which have come before a court or other tribunal; and in few, if any, of these contributions, has any systematic effort been made to separate the now well recognized forms of aphasia into classes for medico-legal purposes. I will, however, briefly refer to some of the most important contributions to this meagre literature of the jurisprudence of aphasia.

In a few of the valuable papers dealing with the general phenomena and mechanism of speech, important medico-legal points are developed in a casual or incidental manner, as in the writings of J. Hughlings-Jackson, Charcot,<sup>2</sup> Lichtheim,<sup>3</sup> and Ross,<sup>4</sup> and to some of these reference will be made in the course of this article. In the second edition of Bateman's treatise on aphasia, a new chapter on the jurisprudence of aphasia is introduced, in which some original observations are given, and references are made to the work of French and German authors.

Bateman<sup>5</sup> cites some cases of interest. In 1843, for example, a resident of Münden, Hanover, applied to the government for permission to make a will in favor of his wife by signs, and the court acknowledged the validity of the act. Another aphasic for five years discharged the functions of mayor and municipal councilor, by writing his name to necessary documents with his left hand. In the same way he also wrote a holographic will which was sustained. These and other cases are also referred to by Legrand du Saulle. Bateman refers to several cases in which the wills of deaf mutes were recognized as valid by the court, because

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1. Hughlings-Jackson: *Brain*, October, 1878, and July and October, 1879.

2. Charcot: *Le Prog. Med.* 1884, and *Med. Press and Circ.*, London, 1884.

3. Lichtheim: *Brain*, January, 1885.

4. Ross: *Aphasia, etc.*, J. and A. Churchill, London, 1887, and *Wood's Medical and Surgical Monographs*, New York, 1890.

5. Bateman: *On Aphasia, etc.*, by Frederic Bateman, M. D., London, J. and A. Churchill, 1890.

it was proved that they understood the contents of the will either through gesture and pantomime alone, or by these and written language combined. He also records the case of a man, 63 years old, who was engaged to be married and was suddenly seized with right hemiplegia and aphasia, and wished to make a will in favor of the lady whom he intended to make his wife. The document was written by one of his medical attendants. The testator's mark was made and the will was attested by witnesses.

He communicated his wishes as follows :

"He made signs for writing materials; his wishes were interpreted by means of signs and then written down on a card. He held up his hand, extended his five fingers, and he was asked if he meant 'thousand,' he bowed assent. He then closed his hand and opened it in the same way, implying ten; this operation was repeated until it amounted to thirty, and then he dropped his arm down. Testator was then asked whether he wished Miss R. to have thirty thousand pounds, and he nodded his head. In order that there might be no mistake about his wishes as to details, he was asked whether Miss R. was to have this sum absolutely; he signified dissent, but on being asked if it was to be hers for life and afterwards revert to his family, he bowed his head."

Unfortunately the testator's mark was made in the middle of the card instead of at the bottom or foot, and so did not satisfy the provisions of the statutes relating to wills, and the testament was therefore refused probate.

Little escapes the novelist, and of the guild of romancers, few have equalled the elder Dumas in the frequent and skilful use of history and science. In the "Count



of Monte Christo" is an interview with a motor aphasic which might have answered as testimony in court in a case in which the question was that of testamentary capacity. The old Bonapartist, Noirtier, paralyzed and profoundly aphasic, angered at his son and daughter-in-law, determines to change his will. His son, his granddaughter, and his old servant, could understand and communicate with him through an arranged system of signs—by his closing his eyes for "yes," by winking them when he meant "no," and when he had some desire or feeling to express, by looking upwards. He signifies his desire for a notary, by indicating to his granddaughter, who recites to him all the letters of the alphabet, that he wishes, "n" and "o" in succession, then with a dictionary he picks out the word "notary." The notary at first refuses to incur the responsibility of making a will for one whose wishes he may not be able to understand, but having been shown that the aphasic does understand what is said to him and can communicate by pantomime, he becomes interested in drawing up the legal document, and asks for a brother notary to be brought, in order that the will if contested may have the greatest possible evidence of its authenticity. The two notaries read the formal copy of the will, and then test Noirtier by much the same method as Bateman relates was employed in the case above cited. Several sums are named before the aphasic, who signals "no" until the question is asked, "Do you possess 900,000 francs?" In answer to this he closes his eyes in assent. He finally succeeds in making a will, of the validity of which the notaries are thoroughly satisfied, although other characters in the story are not equally satisfied with its contents.

At the meeting of the British Medical Association, at Leeds August, 1889, in a discussion of the jurisprudence of aphasia introduced by Dr. Bateman, Dr. Drysdale, of London, cited the case of a celebrated civil engineer who had right motor paralysis and aphasia, but who wrote his own checks, copying them from a former signature of his own, and who for many years was a senior partner of the firm. His partners, however, did all the work. In this case the gentleman retained enough intelligence to play whist with, the cards spread out before him, and left a will which was not contested. Professor Gairdner at a former meeting of the British Medical Association, had mentioned the case of a Scottish judge affected with aphasia, who had continued in office for some years, and sat on his bench while suffering from a form of this malady.<sup>1</sup>

Legrand du Saulle,<sup>2</sup> in a course of lectures delivered at L'École Pratique de Paris, in 1868, discussed, among other things, the testamentary capacity of aphasics, quoting instances of the serious difficulties which may arise in making a will.

At La Salpêtrière Hospital, in 1882, Legrand du Saulle<sup>3</sup> delivered another course of lectures upon "Aphasia and phasics," considered from various points of view. These lectures, twelve in all, were also published in the *Gazette des Hopitaux*, and about one half of them dealt with matter which either directly or indirectly bears upon the jurispru-

1. New York Med. Rec., September 28, 1889, p. 360.

2. Legrand du Saulle: *Gazette des Hopitaux*, June and July, 1868.

3. Legrand du Saulle: *Gaz. des Hop.*, Paris, Vol. LV, 1882.

Legrand du Saulle in this series of lectures refers in several places to other French writers on the mental and medico-legal relations of aphasics. The chief of these references are as follows:

Ch. Sazie: *Troubles intellectuels dans L'aphasie*. Th., Paris, 1879.

Finance: *Etat mentale des aphasiques. Considérations médico-legales*, Th., Paris, 1878.

Legrand du Saulle: *Étude médico-legale sur l'interdiction des aliénés et sur le conseil judiciaire*. Paris, 1881, p. 212.

J. Lefort: *Remarques sur l'interdiction des aphasiques*. (*Bulletin de la Société de médecine de France*.)



dence of aphasia. To some of his conclusions I will briefly refer. He holds that when the lesion of aphasia is confined exclusively to the left third frontal convolution, intellectual disturbance is slight; but according as it has extended to the motor zone, or to the prefrontal region, will paralysis, or disorders of the intelligence appear. He shows that most aphasics have a certain measure of dementia as well as paralysis, but the intellectual disorder observed in aphasics is most variable, sometimes not interfering with the important events of life, at others so wrecking the intellectual faculties as to cause mental incapacity and irresponsibility. The general disorders consist of excitement or depression; the partial affections, of defect of attention, incoherence, hallucinations, or delirious conceptions. Impatience and anger are common among aphasics, whose moods are very changeable. The want of attention is one of the most marked traits of aphasia. Memory and recollection are less alert, and some aphasics exhibit decided loss of memory. Legrand du Saulle insists that aphasia is compatible with intelligence, but that this is always more or less weakened by the loss of language. If the brain lesions are extended and multiple, pronounced weakening, and even abolition of memory may be observed. Incoherence of ideas when present is not by any means on a par with incoherence of language. To lesions of the prefrontal regions he relates the loss of memory and attention, the incoherence, hallucinations, and delirium—probably only a partial truth. He speaks of hallucinations as frequent among aphasics, the most common being those of hearing and sight; sometimes these hallucinations are of a character that may lead to a crime, or may make the aphasic suspicious of others.

Légrand du Saulle admits three categories of aphasics, those in whom intelligence is intact, but slightly touched; those in whom it is manifestly changed, and those in whom it is entirely abolished. A physician called to give an opinion on an aphasic should give attention to the smallest particulars as to his state. He has need also of all of his care and knowledge in scrupulously reviewing all the different forms of language employed by an aphasic. It is always well to make the patient count, to ask his age, to test him with money, etc. Légrand du Saulle gives instructive cases bearing upon these methods of examination.

He further considers in different lectures some of the most important questions of a medico-legal character presented by aphasics—their obstinancy to suggestions, their tendencies at times to injustice to their families, their comparatively rare implication in criminal offenses, their responsibility when accused of crime, the necessity at times of restraining them in asylums and hospitals, the principles and practice of the law with reference to their interdiction, their right to enter into marriages, and their testamentary capacity. His lectures contain many facts and suggestions, observations of cases, and valuable references to French law—but in the main they deal with aphasia and aphasics from a general standpoint, and not with reference to the special changes in mental integrity, which depend sometimes upon the varying sites of lesions.

Gallard<sup>1</sup> in a volume of clinical lectures, delivered at La Pitié, has one chapter on aphasia and aphasics discussed from the medico-legal point of view. He recounts, after the manner of Légrand du Saulle, points of French law in con-

1. Gallard: *Clinique médicale de la Pitié* par M. le docteur Gallard analyzed in le *Journal de Médecine et de Chirurgie Pratiques*, Vol. xlviii, p. 377-380.



nection with aphasics. The conclusions arrived at with reference to the interdiction of aphasics are: (1) If the intelligence of the aphasic is completely obliterated, or, if in preserving his lucidity he cannot manifest it by written language, pantomime, or speech, he should be interdicted; (2) if the intelligence of the aphasic not being completely alienated, has not all its brightness, and can only be incompletely manifested, he should be provided with a judicial counsel; (3) if the aphasic possesses his intelligence, and if he can manifest it sufficiently, whether by word, by writing, or by signs, he has no need of judicial protection, and should be free to manage himself and his affairs.

Bateman refers to a communication by Professor Jolly, read at a Congress of German alienists, held at Carlsruhe, on the capacity of aphasic persons to testate, with a critical analysis of the views of German medical jurists upon this point—but I have not been able to obtain the original paper.

The Parish will case is perhaps the most famous medico-legal case in this country in which the question of the mental power of an aphasic was the main point at issue. Henry Parish made his first will when 54 years of age, and the next year had a slight apoplectic attack from which he soon recovered. Seven years after making his will he had another severe apoplexy which left him for the rest of his life, about seven years in all, paralyzed in his right limbs, and with the power of articulation lost. After this second seizure he also had at intervals epileptic fits. The codicils to his will were contested. The first was made about six weeks and executed about five months after the severe apoplectic attack; about four years later, a second codicil, and about five years after this, a third was made

The surrogate admitted the first codicil and excluded the others. The supreme court and the court of appeals decided against all three. The trial of this case was a notable one, and eminent physicians were employed on both sides. Dr. Isaac Ray, who was one of the medical experts, testified in opposition to Mr. Parish's testamentary capacity, and has contributed a valuable paper on the case.<sup>1</sup>

The William T. Beven case is another interesting American case, reported by Dr. C. H. Hughes.<sup>2</sup> Mr. Beven had been stricken with right hemiplegia and aphasia, probably due to embolism, as he had a cardiac valvular lesion. He became defendant in a suit for the recovery of money on a deed of trust, signed by himself with his left hand when he was aphasic, four months after his first apoplectic seizure, in 1873. This deed of trust had been made in fulfilment of a promise and purpose entertained before his attack. It was against the interest of members of his family that this deed should be allowed to stand, and evidence was adduced to prove that he was insane at the time that the deed of trust was made. Just before, and about this time, his two sisters and brothers-in-law testified that he did certain things which they regarded as evidences of insanity, such as wiping his nose on a napkin, bowing to pictures in the parlor, unbuttoning his drawers when ladies were in the room, striking his mother with a stick, becoming violent and angry when the battery was applied, and making grimaces before the glass. Dr. Hughes, three years after the attack, found that he was suffering from incomplete paralysis of motion on the right side and general anaesthesia; that he understood oral signs, and tardily and imperfectly written

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1. Ray: Contributions to Mental Pathology.

2. Hughes: Amer. Jour. Insanity, Vol. xxxv, Jan., 1879, p. 410.



ones; that he recognized the doctor's name and wrote his own name and that of his attorney and of the doctor; that he either had, or feigned, defective vision, and also impaired hearing in the left ear. He had had three paralytic strokes altogether, but had grown steadily better. Dr. Hughes analyzed the various facts which were brought forward as evidences of his insanity and decided in favor of his competency.

The recorder of this case, Dr. Hughes,<sup>1</sup> has also written a paper—the only American contribution of the kind of which I have knowledge, although others may have been published—on the medico-legal aspect of cerebral localization and aphasia. This article reviews the varieties of aphasia with some consideration of the lesions causing them, and also considers to some extent the effect of simple and complicated aphasia on the judging, comparing, expressing, and other faculties of the mind, citing various authorities in support of his positions. He refers to a number of the tests of an aphasic's mental integrity which have been suggested. Affections of speech, not aphasias, are also to some extent considered. The Parish case and Beven case, and also the Lawler case, which has been put on record by Bartholow, are referred to by the writer. Problems arising from a consideration of the different forms of motor and sensory aphasia are not discussed.

Ray,<sup>2</sup> in his text book, as well as in the monograph on the Parish case, has given some attention to the medical jurisprudence of aphasia, relating several interesting cases.

The Fillmore will case, reported by Dr. Landon C. Gray,<sup>3</sup> is one which has attained considerable celebrity in this

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1. Hughes: *Alienist and Neurologist*, Vol. I, April and July, 1880.

2. Ray: *Medical Jurisprudence of Insanity*.

3. Gray: *American Jour. Neurology and Psychiatry*, Vol. III, p. 549.

country, both because of its intrinsic interest, and of the distinguished position of the parties concerned. Mrs. Caroline C. Fillmore, widow of the ex-President of the United States, in 1877, three years after the latter's death, began to show changes in her character, soon becoming coarse, profane, suspicious, and delusional. She was stricken with hemiplegia. She made two wills, the first eighteen months after the changes in her character were first noted, and nine months before the paralysis; the second will or codicil was made five months before this stroke. She developed a form of aphasia and showed not only this speech disturbance, but a combination of symptoms of general mental impairment. Dr. Gray and others testified that she was insane and incompetent.

It will be seen from this hasty glance at the scanty literature of the subject, that the medico-legal questions which may arise in connection with the study of aphasics are somewhat numerous, although they are by no means all embraced in this review. They include many of those which the insane also present for solution, but with others especially belonging to the aphasias. At the outset it should be borne in mind that we are not dealing with some clearly defined entity called "aphasia." It is not possible to fix upon any general standard of capacity or responsibility for one suffering from an affection simply labeled "aphasia." Even correctly labeling an individual as insane does not decide as to his capacity to have certain privileges, or to do, or not to do certain acts, for example, to have his personal liberty, or the control of his estate, to get married, or to make a will. In a practical, as well as in a philosophical sense, questions of sanity and insanity are relative, and so likewise are those presented by aphasics. They will depend not only on the form of the disorder, but also upon its degree and special characteristics in a particular case.



"The affections of speech met with are very different in degree and kind," says Hughlings-Jackson,<sup>1</sup> "for the simple reason that the exact position of disease in the brain and its gravity differ in different cases; different amounts of nervous arrangements in different portions are destroyed with different rapidity in different persons. There is, then, no single, well defined 'entity'—loss of speech, or aphasia—and thus, to state the matter for a particular practical purpose, such a question as, 'Can an aphasic make a will?' cannot be answered any more than the question, 'Will a piece of string reach across this room?' can be answered. The question should be, 'Can this or that aphasic person make a will?'"

These medico-legal questions may be either criminal or civil, although they are much more frequently the latter. Legrand du Saulle says truly that it is rare for aphasics to be implicated in major crimes; their habitual infirmity to a certain extent saving them from these. Aphasics, however, as all who have had to do with them know, are much given to impatience and anger; their moods are uncertain and changeable, and occasionally dangerous. They have been charged with thefts, and have been implicated in other crimes. One remarkable case is referred to by Legrand du Saulle. An aphasic and hemiplegic was charged with killing his wife; and the case had not only this criminal aspect, but later a civil question, that of the disposal of his and of his wife's property arose. The parties had been married without a contract, and had no children, and each had left to the survivor the whole of his or her property. Attempts were made to nullify the donation of the wife on account of ingratitude, as shown by the assassination, but against this

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1. Jackson: *Brain*, October, 1878, p. 314.

it was urged as the man had been pronounced irresponsible he could not be an ingrate. In the end, however, the donation was annulled and went to the wife's heirs.

Evidently whether or not an aphasic should be exonerated from the consequences of a crime, is a vital matter, and in some cases should be decided on the same principles that would govern the decision in a case of alleged insanity, but these might not always suffice, and the presence of the aphasia, and its form, might need to be particularly considered in arriving at a correct conclusion. Many aphasics suffer to a greater or less extent from various special forms of mental diseases, the degree of which may be dependent somewhat on the location of the lesion causing the speech disturbance, or on the extent to which the aphasic lesion has extended beyond the speech centres, or, again, it may be entirely independent of the aphasia. The lesion which causes aphasia, as is well known, in addition usually produces a certain, and it may be a large degree of paralysis, and less frequently also various sensory disorders. The greater the accompanying disease, even though it be of physical type, the more likely is it that the mentality of the patient will suffer, although this statement must be qualified somewhat by the direction which the lesion has taken. M. Sazie tells of an aphasic who had anæsthesia of his limbs, and who believed that his legs had been amputated, and Legrand du Saulle speaks of monomania, melancholia, hypochondria, and of impulses to drunkenness, suicide, or even homicide among aphasics; everyone who has had much experience with aphasics can recall such cases, but we must remember, with the above author, that these are disorders occurring among aphasics, not a part of the aphasia. Recognizing the importance of such facts as these,



and remembering also that aphasics who are not in any just sense insane, are often greatly misunderstood, it follows that the committal of an aphasic to an insane asylum may sometimes be a serious question for decision, and might eventually lead to a criminal or civil suit.

Kussmaul<sup>1</sup> refers to the fact the word-deaf, possessing at the same time the ability to express themselves in words, but misplacing and often distorting them, leave the impression that they are crazed, and he warns the observer to avoid this error, and also the greater one of regarding the patient as both deaf and demented. He cites several interesting cases—one reported by Baillarger, who demonstrated that a woman who had been regarded as both deaf and demented, was really neither the one nor the other; another of Wernicke's of a paraphasic patient at first supposed to be deaf and crazy.

An interesting case of aphasia complicated with insanity has been reported by Bancroft.<sup>2</sup> This patient was an inmate of the New Hampshire Asylum for the Insane. In 1872, he had an attack of loss of vision and right sided numbness; in 1876, he had another attack which caused indistinctness of articulation, and some disorder of vision; and a week later he was seized with loss of speech, marked mental confusion, and apparently a temporary loss of vision. His mind, it is recorded, was filled with all sorts of insane fancies. The details of the case are well given; it is one of word-deafness, with also some word-blindness, and paraphasia, although the writer is evidently not familiar with the varieties of aphasia. After some months the patient was discharged and sent home, but in a short time was readmitted to the

1. Kussmaul: Ziemssen's Cycl. Pract. Med., American ed., Vol. XIV, p. 773.

2. Bancroft: Boston Med. & Med. Surg. Jour., Vol. CIV, No. 21, May 26, 1881, p. 483.

asylum; because when at home he developed all manner of eccentricities, and insisted on doing all things as he chose, even using threats of violence. Nearly two years later he died in the asylum, valvular disease of the heart having been in the meantime discovered. An autopsy was made, but for localization purposes is not well detailed. The third frontal convolutions were untouched; but lesions are described as present in the anterior portion of the middle lobe of both hemispheres, but much smaller on the left than on the right. Doubtless this patient was properly committed, but the effects of his sensory aphasia on his mental state may not have been fully considered.

Among the civil questions which arise in connection with aphasics perhaps first in importance is that of testamentary capacity, and such allied questions as their competency to make deeds of trust or conveyance, to sign powers of attorney, promissory notes, due bills or checks, to make contracts, or to manage any business involving speaking or writing. As has been already shown, attacks on their competency to make wills or deeds of trust have given rise to some of the most interesting legal contests that have been fought in this or other countries.

The marriage of aphasics has been considered by Legrand du Saulle. According to the French law—and the laws of other nations are probably much the same—dementia is the only thing that interdicts marriage; the presence of aphasia is not considered sufficient reason to prevent it. Signs are recognized as available to signify consent; but it may be necessary to decide as to the true signification of the pantomime and gestures employed by an aphasic. The question is, whether the husband or wife at the time of the marriage had a sufficient degree of intelligence to realize

the act, and whether it was of his or her own will. An interesting case is given of an aged aphasic and hemiplegic widow, who, having fallen out with her daughter, contracted a second marriage against the wishes of her family.

I was once called to testify before a register of wills regarding a man whom I had seen in consultation several weeks before his death. This man had lived for many years with a woman who was not his wife, but by whom he had several children. By many he was supposed to be legally married to the woman. He was stricken with right sided paralysis and partial aphasia; but I found him capable of answering questions, and of reading a little consecutively. I saw him twice before his death, and between my two visits he was married to the woman with whom he had been living. The granting of letters of administration to his wife was resisted by some of his relatives, who claimed that undue influence had been used, and also that he was not in a state of mind to know what he was doing. The main question was whether the man knew what he was doing when he was married, and whether he showed this by his speech and acts. After hearing the testimony the register gave letters of administration to the wife and the case was dropped.

The question of interdiction may come up for decision when an aphasic is alleged to be insane; and the decision may result as in the case of the insane not aphasic, in the patient going to an insane hospital, or of being put simply under the control of a committee or of a guardian.

Other questions may be of the alleged malingering of deafness or deaf mutism by a criminal, a soldier, or an



employe wishing to shirk duty. An apparent aphasia may of course also be one of the phases of an alleged hysteria.

Occasionally aphasia, the result of traumatism, may have a decided medico-legal importance, as in litigation because of injuries resulting among other things in aphasias; and again, the ability of an aphasic who has been injured with criminal intent, to recognize an alleged assailant might be questioned.

In various well known forms of insanity, as parietic dementia, monomania, katatonia, confusional insanity, mania or melancholia, the peculiarities of the speech disorders belonging to the affections may assist in the early or late diagnosis of such cases, and may thus have a bearing upon such legal matters as necessity of restraint, relief from responsibility, or discharge after recovery.

It is not possible to establish fixed rules by which the capacity, competency, or responsibility of aphasics can be measured. This in given cases is largely a matter for judicial decision and technical interpretation of the law. In all civilized countries, and in different states of a country like our own, the administration of the law with reference to such matters as wills, deeds of trust, civil contracts, restraint in asylums, and particular crimes, whether relating to aphasics or others, is based upon precedents, and upon legislative and other enactments. These may sometimes, or in some particulars, be at variance with what is just and equitable from a medical or lay point of view. The object of a paper like the present is to show the methods of gauging the mental status of those affected with disorders of speech, which mental status, from the medical point of view, would be the criterion of competency and

responsibility; but such studies might lead us to the conclusion that a testator in a certain case was competent to make a valid will, although his testament might not be sustained by a court because of a technical violation—whether due or not to the patient's disorder—of a provision of the law.

In the case already referred to, cited by Bateman, an aphasic evidently knew what he wished to do, and his meaning was evidently correctly interpreted by others, but because he had made his mark in the middle of the paper written for him instead of in the position called for by the statute, the instrument was held as not properly executed and probate was refused. In this case conjoined medical and legal investigation indicated the just course, which, however, could not be followed because of a peculiar statute.

The French law recognizes three kinds of wills—that by public act before notaries and witnesses; the holographic will, or that written by the testator's own hand unguided by another; and the secret will (*testament mystique*.) The secret will may be written entirely by the hand of the testator like the holographic will, or be written by another person and only signed by him. It is then given in charge of a notary in presence of a stated number of witnesses, who countersign the envelope, and close and seal it; and upon this the testator writes, or causes to be written, that this is his will duly signed by him. Thus if the writing and signing of this will is illegible or difficult to read, this act acquires the value even of a holographic will. (Gallard.)

Under even these, or similar laws, an aphasic who, medically speaking, might be entirely competent to do certain acts, as could be determined by careful medical examination, would be shut out from carrying out his own recognizable wishes.

Even expressive and correct pantomime would not suffice in such a case. Cases of this kind are mentioned by Legrand du Saulle and others.

I am not, however, concerned in this paper with the application of the facts of science to exact statutes and decisions, but rather with the consideration of the various degrees of preservation of mental integrity by those suffering from aphasia and other affections of speech, and the discussion of the direct or indirect bearing upon various medico-legal questions of such affections.

It is not written solely for alienists and neurologists, but for all who may be interested in the problems with which it deals; still it will be necessary to take for granted a considerable knowledge of aphasia and other speech disturbances, or otherwise the article would be extended to extreme length, and the special subject for consideration would be lost in a labyrinth of explanations. It will be necessary, however, at the risk of being too elementary for some of my readers, to define certain terms and to give a few of the most important facts with a reference to the nature and mechanism of speech and its disorders, and also regarding the sites of lesions producing aphasias and infra-cortical speech defects, in order to make clear the subsequent treatment of the subject which will be largely from the standpoint of localization. While it is impossible to make explicit statements with reference to the mental status—or legal status which is sometimes a very different matter—of aphasics, basing such statements upon the location of a lesion in a certain centre, zone, or commissure, something can be done in this direction, and one object at least, is to show how far capacity and competency may be influenced by the site of an aphasia-producing lesion.



Before the term aphasia was fully engrafted upon medical nomenclature, and to some extent since, numerous other terms have been used to describe disorders of speech from cerebral disease. *Alalia* was employed by Lordat in the same general sense afterwards accorded to aphasia, but it is now not used or restricted to the meaning given it by Kussmaul, that is, an entire inability to utter articulate sounds, ranking it under the heads of losses and defects of enunciation. *Aphemia* has also been used by Broca and others for cerebral speech disturbances in general. Ross still uses it to describe the commonest form of motor aphasia, the loss of the power of communicating thought by articulate words; but Bastian has suggested that aphemia be confined in its definition to defects of speech from lesions of those fibres which connect the motor, or as he would say "kinæsthetic" centres, of the cerebrum, with the nuclei of the bulb. McLane Hamilton has suggested *asemasia*, which means an inability to communicate by signs or language, and etymologically this is one of the best names to describe the affections of speech, writing and pantomime, whether loss or defect, from disease of the brain; but as Hughlings-Jackson has said, it is too late to displace the word aphasia, which will be used in this paper in its commonly accepted and general sense to indicate cerebral loss or defects both in language and signs.

Formerly the terms *ataxic aphasia*, and *amnesic aphasia* were employed almost universally, and these expressions are retained by high authorities. Ataxic aphasia has been used to describe the aphasia of common type resulting from lesions of Broca's convolution and the immediately adjacent region, on the supposition that the affection of speech is an

inability or incapacity for the motor co-ordination of words ; but as it is a matter of dispute whether the affection should not be regarded as paralytic, or even sensory, rather than ataxic, it is best not to continue the use of this expression. Amnesia is loss of memory, and amnesic aphasia is the term which has been applied to those affections of speech which are the result of lesions on the sensory, or receptive side of the brain. Kussmaul defines amnesic aphasia as the incapacity for the recollection of words as acoustic aggregates of sound ; but objections have been also urged to this term based upon theoretical considerations.

Disregarding for the present differences of opinion of almost equally high authorities, the best practical subdivision of the aphasias is into *sensory* or *receptive*, and *motor* or *emissive*. Bastian holds that all forms of aphasia are in effect sensory regarding the centres for speech and writing usually termed motor, as kinaesthetic, that is, sensory centres concerned with the registration of muscular sense impressions derived in the one case from the organs of articulation, and in the other from those concerned in writing. In a paper concerned with the practical application of our knowledge of aphasias, it will only be necessary to understand the signification in which the terms selected are used, and without committing ourselves positively to theory on the subject, we will speak of motor aphasia and sensory aphasia with the same meaning as such authorities as Kussmaul, Charcot, Broadbent and Ross. Under the general term sensory aphasia I will therefore include those affections of speech which are dependent upon disease located in the receiving part of the brain. Sensory aphasia has, therefore, necessarily several varieties, as *word-deafness*, and *word-blindness*, terms

which define themselves, and *apraxia* sometimes called soul-blindness, mind-blindness, or object-blindness. *Apraxia*—an important form of brain disease from a medico-legal standpoint—is defined by Kussmaul as an affection in which “the memory for the uses of things is lost, as well as the understanding for the signs by which the things are expressed.”

“For this general symptom of inability to recognize the use or import of an object,” says Starr,<sup>1</sup> “the term *apraxia* is now employed. And since *apraxia* is a symptom which is very frequently associated with aphasia and which, in fact, may lie at the basis of the aphasia, it should always be looked for in a patient. To test for *apraxia* it is only necessary to present various objects to a person in various ways and notice whether he gives evidence of recognition. Have him watched by his friends, and they will be able to tell whether he still chooses his articles of food at the table intelligently; whether he still knows how to put on his clothes, to use various toilet articles, to sew, knit, or embroider if the patient is a lady, to admire pictures or flowers, or perfumes, as before the illness began. The patient may, or may not be able to name these objects; that, at present, is not the question. But it is evident that the subject awakens an idea in the mind.”

Motor aphasia includes the common form of disorder of speech sometimes known as Broca's aphasia, or ataxic aphasia, and in addition *agraphia*, or loss of the power of writing when this is due to disease of the graphic centres or tracts in the motor cortex. *Amimia* may be regarded as a variety of motor aphasia in which the patient has lost the

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1. Starr: N. Y. Medical Record, October 27, 1888.



power of expressing his thoughts by sign or pantomime. This, however, may be due to disease either on the sensory or on the motor side of the brain. It is usually a part, but a very important part, of speech and graphic aphasia, and a consideration of pantomimic speech should receive careful and close attention from those engaged in studying the subject for medico-legal purposes.

Besides the varieties of aphasia resulting from lesions affecting only, or chiefly, cortical *centres* of speech, on whichever side of the brain these may be situated, other affections must result from the breaking through of the commissures or lines of connection between the various centres. These give us what are known in general terms as *paraphasias* or *conduction aphasias*, which may be of as many types as there are commissures. Sensory and motor centres and commissures may all be affected at the same time, and this gives the *total aphasia* of some writers, or what is perhaps better called by Ross, *combined sensory and motor aphasia*.

Other terms in use are those descriptive of the peculiarities of symptomatology exhibited by the different varieties of aphasia to which reference has been made—thus we have alexia, dyslexia, paralexia and paramimia. Some of the symptoms thus designated may be produced by either sensory, motor or conduction disease, or by combinations of these. *Alexia* is abolition of the power of reading, as *agraphia* is of that of writing; *dyslexia* refers to difficulty or fatigue in reading; *paralexia* to the misuse by transposition or substitution of either syllables or words, while *paramimia* is the misuse of signs or pantomime.

Although the terms used in describing the different varieties of cerebral speech disturbance are numerous, each is descriptive of some clearly defined symptom or syndrome, which in its turn can be referred to a more or less restricted and a localizable lesion. The medico-legal problems, criminal or civil, which may arise in connection with aphasic disorders, could be considered without any discussion of the sites of the lesions which cause these affections. In other words, a knowledge of the symptomatology of aphasias might be sufficient to enable the physician or jurist to draw conclusions as to the influence of these disorders upon mental resistance and capacity; nevertheless, some acquaintance with their pathology and morbid anatomy should serve at least to make more precise and clear the comprehension of these cases, as it should aid in materializing them to the mind of the investigator. One should be able not only to define word-deafness, word-blindness, psychical blindness, or psychical deafness, agraphia, amimia, aphemia, paralexia, etc.; but he should be able also to picture before his mental vision the localities in the brain where the damage of disease or accident has led to the production of these symptoms.

A brief consideration, therefore, of the relations of these disorders to the particular locations of lesions in the brain may serve to make the medico-legal aspects of the subject more tangible and comprehensible; for it will thus be more clearly seen that we are not dealing with mere names and speculations, but with theories which have either been developed from, or corroborated by, observed facts. Various schemes and diagrams of the centres, and tracts of speech, and of their possible lesions, have been suggested, and almost any one of these might answer for the separation of aphasias in a

study of them for medico-legal or other practical purposes. Lichtheim<sup>1</sup> indicates at least seven localities for diagnostically separable lesions without including the visual or concept centres, or some of the hypothetical inner commissures. It may easily be necessary to consider ten or more locations in the cerebrum of such lesions in a paper like the present.

One, and a prominent object of the paper, is to deal more or less fully with the effects of each or any of these separable lesions upon intelligence, mental resistance, and the ability to express thought. The task is one of exceeding difficulty, although it would be comparatively easy if we had only to treat of neatly limited lesions of centres or tracts; but brain disease rarely favors us with precise experiments, and therefore we are most frequently compelled to reason upon the effects of lesions variously combined and unusually extended or complicated.

In what will follow, I cannot of course go at any length into a description and discussion of the tracts, centres and commissures concerned with speech, and of the various lesions to which they are liable. The monographs of Jackson, Lichtheim, Kussmaul and others, should be consulted by those desiring full details and elaborate explanations.

The principal brain centres or areas concerned with the phenomena and mechanism of speech are (1) Auditory (centre of auditory images); (2) Visual (centre of visual images); (3) Concept; (4) Propositionizing (centre of motor images); (5) Utterance; (6) Graphic or Writing; (7) Inhibitory higher prefrontal centres.

Of receptive centres I have mentioned only the auditory and visual for the sake of simplicity, although of course im-

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1. Lichtheim: *Brain*, Vol. VII, January, 1885.



pressions received by the cerebral centres for touch, taste, and smell, and particularly by those for touch, may sometimes enter into the mechanism of speech.

The chief cerebral tracts and commissures concerned with speech are (1) The entering auditory tract which conveys inward impressions to the auditory centre; (2) The entering visual tract; (3) The commissures between the auditory and concept centres; (4) The commissures between the visual and concept centres; (5) The commissure between the auditory and visual centres; (6) The commissures between the concept and propositionizing motor centre; (7) The direct tract, sometimes used, between the auditory and propositionizing centre, instead of the innervation passing by the way of the concept centres; (8) The short commissure between the propositionizing and utterance centres; (9) The similarly short commissure between the propositionizing and graphic or writing centres; (10) The direct tract, sometimes used, from the visual sensory centre to the motor graphic, or writing centre; (11) The tract or tracts connecting the motor cortical centres concerned with speech and writing with the centres in the bulb and spinal cord.

Restricting ourselves to this number and arrangement of cerebral speech centres and pathways, the first cerebral tract involved in spoken and written language would be the entering auditory tract—the path between the primary auditory centres in the bulb or cerebellum and the cortical centre for words, which is situated in the posterior thirds of the first and second temporal convolutions. Lichtheim has placed this path in the left temporal lobe, and believes that the radiations from both acoustic nerves and nuclei

come together in this side of the brain. Word-deafness would be the chief characteristic of a lesion of this entering pathway, as it would be also of a lesion of the auditory centre itself, but in the latter case paraphasia and paralexia would also be present, as the patient would be unable to verify the correctness of his spoken words by hearing.

The entering tract for vision passes by way of the optic radiations of Gratiolet which are chiefly in the occipital lobe, from the primary optic centres in the thalamus to the cortical centres for words in the angulo-occipital region. Word-blindness would be caused by lesion either of this entering tract or of the visual centre for words. Experience shows that other symptoms, such as mind-blindness and hemianopsia, are often associated with the word-blindness, because the tracts and centres concerned with the functions of sight impaired in the latter disorders are closely associated with those which take part in word-vision. It is clear that one form of alexia or abolition of the power of reading, and also, of course, one form of impairment or abolition of the ability to write would be present in cases of word-blindness produced by lesions thus situated; but it must be remembered that the word-blind can sometimes write from dictation or spontaneously, largely by the aid of tactile or muscular sense; and that they can also sometimes copy printed or written text which they may not be able to read or understand, probably as they would copy a geometrical or other figure.

An important variety of aphasia from the medico-legal point of view, and one not yet defined in this paper, is that known as *verbal amnesia*, or the *aphasia of recollection*. Those suffering from this disorder may be neither word-deaf nor

word-blind, nor be directly disturbed in motor speech, although the affection may be and often is combined with other forms of aphasia. Pure verbal amnesia is inability to recall the name of an object, quality, or event, although the conception or idea of it is present in consciousness. This loss of word memory may be almost or absolutely total, or it may be so slight as to be little more than a species of absent-mindedness. The proper word is not revived in the memory, although the person or thing is actually heard or seen, and is recognized. Nouns, and especially proper or general names, are the parts of speech most commonly lost, because they are the last and the least organized in the brain. Many instances of this disorder have been reported by writers.

Recent authorities are agreed as to the necessity of some area and mechanism on the sensory or receptive side of the brain, or intermediate between it and the motor cerebrum, for a higher intellectual process than the mere registration of auditory and visual impressions—for the formation of concepts in contradistinction to percepts which are represented in the true cerebral centres of hearing and sight; for the organization in consciousness of definite ideas and the identifying of these with names. As to the existence of topographically separated centres or regions for this higher process, considerable difference exists. Some, with Broadbent, advocate a special naming, idea, or concept centre. Others do not consider that a centre for the elaboration of concepts is localized in any particular spot or area of the brain, but that this process is rather the result of the combined action of the whole sensorial sphere, and that the commissures between the sensory and motor speech centres



and this conceptual sphere consist of converging radiations from various parts of the cortex to the receptive and emissive centres.

The views of Ross<sup>1</sup> on this subject are worthy of quotation, because of their intrinsic interest, and because, also, of their bearings on those problems of mental capacity and competency which are the chief concern of this paper.

"And on passing from thinking by percepts to thinking by concepts, and from that to thinking by abstracts," says Ross, "there are no new centres introduced, but only a complication upon complication of one perceptive centre. All that can be said is that the correlative of perceptive thinking is excitation of that portion of the cortex of the brain which is directly connected with the sensory inlets, of conceptive thinking excitation of portions of the cortex which are indirectly connected with them, and of abstract thinking excitation of portions which are still more remotely connected with them. It must, however, be remembered that the effective working of the portions of the cortex which are remotely connected with the sensory inlets will, in a great measure, depend upon the integrity of those which are in direct relation with them.

"Let us now attend to the effects of dissolution of this structure. A destructive lesion of the portions of the cortex which are most remotely connected with the sensory inlets would destroy the capacity of the patient for highly abstract reasoning, and would no doubt inflict considerable damage on the language in which abstract thought is embodied, but this condition would not be recognized as an aphasia; and even the intermediate portions of the cortex in which con-

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<sup>1</sup> Ross: Aphasia; in Wood's Medical and Surgical Monographs. Vol. vi. No. 1, April, 1890, New York.

ceptive thought is carried on might be seriously damaged without giving rise to a special speech disorder, inasmuch as any impairment of speech which might be present would only be regarded as a part of a general decay of the reasoning faculties. When, however, the lesion is situated in or near to the sensory inlets, a disorder of language results which is out of all proportion to the general impairment of the reasoning faculties. There are several reasons why the power of thought is comparatively spared under such circumstances. Thinking by means of percepts is correlated with the activity of both hemispheres, and consequently one hemisphere will carry on thought on the low level when the other is injured. And, although speech is organized in one hemisphere, a destructive lesion of one of its sensory inlets does not cut off the patient altogether from communication with the external world. The portions of the cortex the activity of which is correlated with thinking by concepts and abstracts can be reached by the word-deaf through the eye, and in the word-blind through the ear, and in those who are both word-deaf and word-blind through the nerves of muscular sense and those of the other special senses, so that thinking on the middle and high levels is not completely arrested. Inasmuch as speech is first organized in connection with the sense of hearing, a lesion in or near the auditory cortical centre will cause, as already remarked, a greater disorder of speech than does disease of other sensory centres. Now, suppose that the auditory centre itself is spared, and the lesion is situated in the cortex near it. The patient can now appreciate a general name uttered in his hearing as an acoustic image, and he can immediately repeat it. The verbal sign, however, never sounded in his

ear without reviving some kind of concept, the two being inseparable. The concept evoked by the verbal sign may be, indeed, and probably is, a very undeveloped and imperfect one, but it suffices for the purposes of identifying the corresponding percept. When, however, the excitation of what remains of the auditory centre, which is caused by the falling of the verbal sign on the ear, fades away, the percept is not capable of reviving in memory either the concept or the general name which embodies it. We see nothing in this except that less resistance is offered by the nervous structures to the passage of nerve currents from the less organized structure representing the concept to the more organized one representing the percept, than from the more organized to the less organized, but this is only a particular example of a general law. There is no occasion, therefore, to postulate the existence of a complicated mechanism of centres and conducting paths for what can be so simply accounted for."

Broadbent,<sup>1</sup> on the other hand, believes that a certain convolutional area which might be called the "idea centre," or "naming centre," exists on the sensory or upward side of the nervous system, and conjectures that it is situated on the under surface of the temporo-sphenoidal lobe near its junction with the occipital lobe, as it seems to him that fibres from all the convolutions in which perceptive centres have been placed converge to and end in the gray cortex of this region.

Rosenthal<sup>2</sup> has recorded a case of verbal amnesia without word-deafness in a patient suffering from general paralysis, which defect of speech was ushered in by an apoplectic form

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1. *Brain*, Vol. 1, January, 1887.

2. Cited by Ross.



attack, and persisted unchanged for upwards of two years. At the autopsy, besides evidence of a chronic leptomenigitis, an old focus of softening was found in the second and third temporo-sphenoidal convolutions, the first temporo-sphenoidal convolution being quite free from disease.

After all, the existence of a special development or organization of the cortex for thinking by concepts and for the clothing of ideas in names, is recognized by authorities like Ross, Bastian and others, who only differ from Broadbent, Charcot, Kussmaul, and the school of believers in separate concept centres, in not restricting this organization to an area absolutely set apart. It is neither improbable nor unphilosophical that a region conveniently intermediate between all the receptive and emissive centres concerned in the mechanism of speech may constitute a special, but not narrowly limited, area of the cortex, which is the anatomical substratum for concepts and the names which they awaken. Either the temporo-occipital regions indicated by the observations of Broadbent and Rosenthal, or perhaps this region and also the island of Reil and retro-insular convolutions, and the cortex above and behind the posterior extremity of the Sylvian fissure, would meet the requirements. The parts played by the ganglia—the thalamus, the lenticular, and the caudate nucleus, and the amygdala — in brain action, are still obscure and almost unknown, and these may eventually be shown to play an important part either in connection with the incoming or outgoing streams of impressions and impulses that are concerned with speech; but at present we can only reason with reference to known facts, which relate almost entirely to cortical centres and their commissures.

The chief affections of speech and of thought due to lesion of this naming, or concept cortex, whether it is regarded as an isolated area or as a complication of centres and paths spread over the whole sensorial sphere, are varieties of verbal amnesia or the aphasia of recollection, with usually additional symptoms, such as loss of understanding of spoken or written language, or of volitional speech or writing, because of the almost necessary involvement of commissures to other centres, sensory and motor.

Various degrees of loss of understanding of both spoken and written language—various affections of hearing and speech, or of vision and speech—may be due to lesions of the inner commissures between the auditory and visual centres, or between these and the concept centres; and likewise various degrees of disturbance of thought and speech from lesions of the paths between these concept centres and the motor regions for speech; and these disorders will partake of the impressive, receptive, or sensory character, on the one hand, or of the expressive, emissive, or motor character, on the other, according as the lesion is respectively towards the sensory or motor side of the brain.

Isolated word-blindness, according to Lichtheim and other observers, is the result of a break between the visual and auditory centres of word-representation.

Paraphasia and paragraphia, or disturbances in speaking and writing shown in the misuse and jumbling of sounds and words, result from interruption in the commissure between the auditory and motor speech centre, or in the arc which unites visual, auditory and motor centres.

Beside word-deafness and word-blindness, disorders known as *psychical deafness* and *psychical blindness* occur from

cerebral disease; the word-disturbances are perhaps best regarded as degrees or varieties of the more comprehensive psychical affections. The case of psychical deafness, however, may in addition to word-deafness, or perhaps independently of it, have lost general auditory memory for objects, and for sounds of definite import. In psychical blindness the visual memory of forms and colors, and of things in general, may be lost, or the power of recognizing by sight the special properties of objects may be impaired or destroyed; although even such patients may preserve sight of a lower kind, that, for instance, which would enable them to avoid obstacles placed in their path, as the psychically deaf may also by lower centres appreciate vibration or noise.

Apraxia already defined as the inability to recognize the use or meaning of objects, it will be seen might be the result either of psychical blindness or psychical deafness or of both. Apraxia and verbal amnesia are not necessarily present in the same case. It is conceivable that an individual might be able to name an object the use of which he did not recognize; and in a common form of verbal amnesia the patient is conscious of the uses and properties of things the names of which it is impossible for him to revive in memory.

It is difficult to affirm positively as to the location and extension of the lesions which produce these conceptual disorders of speech and thought. If we acknowledge the existence of concept areas as practically distinct centres or regions, or even if we take the view that they exist as complications or elaborations of the true auditory and visual and other receptive centres, then lesions of these higher



cell-clusters, particularly if extensive, might, of course, give rise to the disorders in question. Severance of association tracts between the concept and the perceptive centres may, however, often be the cause of different varieties of these psychical disorders according to the tracts dis severed. To give a simple illustration, one of my patients who was both object-blind and word-blind, could not recognize a purse by sight, but on handling it, examining its clasp, etc., she at once named it correctly; probably the tracts between the visual perceptive and higher visual areas were destroyed as well as the word centres, while the tactual centres and the lines of communication from them to the concept region were unaffected.

Dyslexia is probably most frequently due to a partial break or lesion in the commissures between the visual and the motor aphasic centres, although imperfect destruction of the commissure between the visual and auditory centres, or between those for word-hearing and Broca's convolution might cause some degree of this disorder. Paralexia, like paraphasia, may be due to severance of the communications between either the auditory or visual centres, and the motor speech regions.

The disturbances of the power of expressing thought by signs or pantomime known as amimia and paramimia, like the disorders of speech, may be both sensory and motor and may be due to lesions variously situated. Loss or impairment of pantomime is in many cases proportionate to the disturbance in speech, but the two do not always go hand in hand, and some patients recover pantomimic power more speedily than ordinary speech. Using the terms sensory and motor in the same sense that we have employed them

in speaking of aphasias proper, pantomime may also be either sensory or motor, or it may be mixed or even total: so that its seat may be in almost any part of the arc concerned with receptive, conceptive, or emissive processes. If the visual centres or entering visual tracts are destroyed, the patient will not be able to use sight in the execution of manual or other forms of pantomime in so far as they may be dependent upon vision. Even impairment or destruction of the entering auditory tracts, or of the centres for auditory images, might impair pantomime which would otherwise be called out in response to sounds and words heard. The most distinctive interference with pantomime will, however, be from destruction of centre for propositionizing and of the tracts connecting it with the concept centres on the one side, or the centres for movements of the limbs or face on the other; or from the destruction of the concept areas and their commissures. Pantomimic disorders may therefore be either amnesic or motor, or a combination of both. Some of the most interesting cases of aphasia associated with impairment or destruction of pantomimic or gesticulatory speech indicate these differences both in the form of the disorder, and in the site and extension of the lesion causing them. In an aphasic who nodded affirmatively with the head when she wished to answer in the negative, and used two fingers to express four, and made similar mistakes of pantomime, a cyst was found destroying a great part of the third left frontal convolution, the entire left island, and the neighboring medullary substance and anterior third of the corpus striatum<sup>1</sup>. This patient knew that she expressed herself wrongly, and the disorder was

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<sup>1</sup> Perroud, cited by Kussmaul in Ziemssen's Cyclopædia.

therefore not amnesic; but many amnesic cases have been reported.

The purest forms of motor speech defect will, of course, be due to an isolated lesion either of Broca's convolution, the propositionizing centre of Broadbent, or of the utterance centres at the foot of the central convolutions, or of both together. Such cases although not very numerous have been reported; some which are well known in the literature of aphasia which seem to clearly prove that only the loss of propositionizing power is present when the lesion is absolutely limited to Broca's convolution.

While it is true that the power of building and rehearsing in the mind a phrase or sentence, and the power of uttering are commonly lost together, still such a combination does not always exist in aphasic cases. Doubtless two processes of this kind which are so intimately connected and so often jointly lost have their anatomical substrata in closely adjoining localities, and one so-called centre might be considered, after the manner of Ross, simply as a complication or extension of the other, but still the more elaborated area is separated, even if it be by only the shortest distance, from the other.

Aphasia from destruction of Broca's convolution should give loss of volitional speech, and volitional writing, and if the utterance centre, or utterance portion of the compound centre, is destroyed also, the power of repeating and of reading aloud should also be lost. Spoken, and written words, however, could be understood and the faculty of copying retained.

The destruction of the short commissures between propositionizing and graphic centres must nearly always take place



in lesion of Broca's convolution and its sub-cortex, and hence give both motor aphasia and agraphia.

I have reported an interesting case which shows clearly that utterance may be largely abolished from a limited cortical lesion while propositionizing power remains intact. This was a case of oro-lingual monoplegia in which a focus of strictly cortical yellowish softening was found involving the lower extremities of the central convolutions, both on their external and Sylvian surfaces, and a spot one-half inch in diameter about the middle of the internal portion of the island of Reil. This softening reached into the fissure of Rolando, and also into the precentral fissure, but it did not reach to the anterior branch of the Sylvian fissure, its anterior limit being one-fourth of an inch from this fissure. In this patient the muscles of articulation were distinctly involved, giving an oro-lingual mono-paresis. He could talk, but pronounced certain words indistinctly. He comprehended objects and words by hearing and sight, and could read understandingly, but could not pronounce well owing to the above described articulatory defect. He had no difficulty whatever in propositionizing.<sup>1</sup>

Clearly in most cases of destruction of the motor speech centres, as the sub-cortex usually to some extent takes part in such lesions, commissures of some kind must be involved, and hence varieties of commissural or conduction aphasia are nearly always blended with the motor disorders, but these are often recovered from in part or whole.

Agraphia, or the loss of the power of writing, which may, of course, be of the highest importance in various medico-legal directions, may be due to lesions variously situated, and

may therefore be of several varieties. I have already spoken of what might be termed the sensory forms of agraphia due to lesions of the visual centres or of the entering visual tracts; but even motor agraphia is of several kinds. The patient, for example, may be unable to write spontaneously, although he can from dictation, and he may at the same time be able to copy either written or printed text; or again he may not have the ability to write either from dictation or by copying. Lesions situated in several places may give rise to motor agraphia; for instance, in the first place, a lesion of the special motor centres concerned with writing. Agraphia may again be dependent upon lesions of the tract uniting the concept with the speech and writing centres, and if a direct separate tract exists between the visual and graphic centres, the power of copying may in such a case be retained. As propositionizing is as necessary to volitional writing as to volitional speech, destruction of the left third frontal will cause more or less agraphia as well as aphasia.

"The same result," says Gowers<sup>1</sup>, "follows an isolating lesion just beneath the cortical centre, and hence the path to the arm centre must be by the 'associating fibres' of the subjacent white substance, and not the gray matter of the cortex. But it is conceivable that a sub-cortical lesion may be so placed as to interrupt the paths to the internal capsule and to the opposite hemisphere, and not that to the arm centre. In such a case there would be permanent loss of uttered speech without loss of the power of writing. Such a condition has actually been observed."

The form of infra-cortical affection of speech which results from lesion of the tract or tracts connecting

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<sup>1</sup> Manual of Diseases of the Nervous System, American Edition, Page 545.

because of the frequent disturbance either by pressure or destruction of this portion of the cerebrum. In many cases of hemiplegia, aphasia, at first very prominent and positive, after a time disappears in large part or even almost entirely, the paralysis of the leg and arm remaining very pronounced. Some of these cases are to be explained by the fact that the intra-cerebral facial tracts are only affected by pressure, and in others even when they are more or less destroyed, the opposite hemisphere assumes the work of both. The common view is that the bilateral movements which occur during speech may be innervated from each hemisphere. More or less complete destruction of the fibres which connect the oro-lingual and other facial areas of the cortex with the nuclei of the various nerves concerned with articulation and phonation, does sometimes give a disorder of speech, which has been variously described as *pseudo-bulbar paralysis*, *labio-glosso-pharyngeal paralysis of cerebral origin*, *aphemia*, etc., and cases have been reported by Kirchoff, Ross, Hobson, Bastian, the writer and others. These patients articulate with difficulty; paresis or paralysis of the tongue is present; labials and gutturals and linguals may be all troublesome to pronounce; drawing of the face will usually be present; swallowing may be difficult, the movements of the jaws may be impaired; and drooling is a frequent symptom. In such cases interference with speech is sometimes extreme amounting almost to complete speechlessness. While such a train of symptoms usually accompanies a generalized hemiplegia, it is occasionally observed unconnected with paralysis in parts other than the face.

This pseudo-bulbar paralysis is a more decided and permanent affection when the result of bilateral disease, but



a form of it can occur from a deep seated lesion of the left hemisphere only. Strictly speaking, Broca's convolution is not directly connected with the basal nuclei, but indirectly through the utterance or glosso-labio-pharyngo-laryngeal cortical centres, and the larger portion of the fibres which go down from these centres to the bulb pass by way of the left hemisphere, although a partial decussation probably takes place. If a commissure connects the speech or utterance regions of the two hemispheres, it will be comparatively close to the cortex, and destruction of this commissure as well as of the fasciculus to the bulb, would account for some of the infra-cortical speech, or articulatory disturbances.

The following quotation from Lichtheim<sup>1</sup> is of value as throwing light upon the peculiarity of disturbances of speech from lesions of the white matter of the cerebrum:

"Lesions of the deeper portion of the brain, followed by disturbance of speech, moreover, do not bring about aphasia with its characteristics as a verbal trouble; the formation of sounds is more or less prominently interfered with. This verbal characteristic of the cortical symptom is a natural consequence of the functions now usually attributed to the cerebral centres in general and of the innervation of those concerned in language especially. If we presume that Broca's sphere is the seat of acquired motor word-representation (kinæsthetic centre), and that its lesions obliterate these memories, and so give rise to aphasia, it follows that its destruction must affect *words* and not *sounds*; for those representations acquired during childhood are associated with words only. It is at a much later period of development that we have learned to decompose

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<sup>1</sup> Lichtheim: *Brain*, January, 1885, p. 481 and 482.

words into sounds. As the elements for the formation of words are deposited in the cortical centres of speech, so the dispositions for the production of sounds are made in the bulbar nuclei. The paths, therefore, between Broca's centre and the nuclei will have to undergo a corresponding conversion. The question is now where this conversion takes place; whether low down in the pons, as Wernicke supposes, or, as I think, much higher up, basing my opinion on the fact that disturbances of speech, arising from lesions of the deeper cerebral regions, do not, as just mentioned, partake of a purely *verbal* character.

"All these considerations compel us to assume that only a short extent of the efferent tract from Broca's centre is so constructed as to give rise, on being injured, to real aphasic disturbances. We shall therefore have to look also for the lesion of aphasia without agraphia in the white matter of the hemispheres, though we can yet scarcely conjecture its localization. Two new contributions, the results of which, however, are scarcely concordant, point, not to a simple radiation of the fibres from Broca's convolution towards the internal capsule, but to a more complicated arrangement."

Before taking up for consideration special forms of speech disorder, beginning with the receptive or sensory affections, a few general remarks might be made on the mental status and integrity of cases of sensory or receptive aphasia as compared with cases of motor or emissive form. In general terms it is doubtless true, as various authors have expressed themselves, that mental capacity and its manifestations are more impaired in those forms of amnesia or aphasia which are the result of lesions on the sensory side of the brain, that is, in word-deafness,

word-blindness, in the various forms of apraxia or mind blindness, and in those combined forms of speech and pantomimic disturbance which are due to lesions of the receptive or impressive mechanism of speech. Words seen or heard fail to revive the ordinarily appropriate ideas in memory. Mind-blindness is not always associated with word-blindness, nor psychical deafness with word-deafness, but when such an association is present it would require the closest scrutiny of the particulars of a case of alleged capacity or incapacity to determine the true status of the individual, and the presumption would be rather against than in favor of the preservation of mental power for definite purposes. More commonly than otherwise, word-blindness and word-deafness are present in the same case, and quite often the more serious psychical disorders are also associated. While, however, all this is true, it is not correct to teach that word-deafness, or word-blindness, or even mind-blindness or psychical deafness necessarily destroy mental integrity to such an extent, as to shut out testamentary capacity, the ability to make contracts, to testify as a witness, or to take care of one's person or property.

What is the mental status of a case of word-deafness? With what voluntary acts would such an affection interfere? Perhaps first in importance comes the question of testamentary capacity and similar exercises of mental power in assenting or dissenting to legal papers. Gowers says that word-deafness is incompatible with will-making, because it is impossible to know whether the testator really understands what is said to him, but this is putting the matter too strongly. If the individual is only word-deaf from lesion of either the entering auditory tracts or of the auditory centre, but still preserves full cerebral visual power,



and intact lines of communication between the visual centre and the motor areas for speech and writing—a will might be made, or other legal papers, such as deeds of trusts, contracts, etc.,—be drawn up and express the real intentions of the individual in question. It ought not to be necessary, in other words, for competency that the person should be responsive by every channel of communication. This as so many other cases of the kind we are discussing, should be studied on its own merits, and testimony as to how the disputed act was done should be clear and unmistakable. Evidently a completely word-deaf patient could not express either assent or dissent by hearing, and peculiar statutes might have some bearing on the capacity of a case of word-deafness; for instance, if it was required by statute that the testator should be addressed by spoken words. If he was capable of assenting or dissenting with certainty by any of the legitimate or legal means of communication, he might be competent.

According to Bastian, word-deafness, when caused by a lesion of the left auditory word centre, must always be associated with aphasia and agraphia—that is, a completely aphasic condition. This is because names cannot be recalled voluntarily or by association. This assertion of Bastian's is probably too sweeping, but has in it a large measure of truth. Some word-deaf patients are or become able to communicate in spoken or written language, but if the lesion is complete the interference with all methods of communication will also be nearly complete until new centres are educated and new lines of communication opened, or compensation takes place through the other hemisphere. Complete word-deafness is therefore a serious affection in its direct effects on thought and its expression,

and also because of conditions with which it is likely to be complicated. Bastian says that a totally word-deaf patient might perhaps not understand written language, but acknowledges that this ability might persist to some extent through the action of the opposite hemisphere. In spite of the seriousness of word-deafness, it is, however, a mistake to conclude too hastily that the individual is either incompetent, or in any technical sense insane. I have already referred to several cases regarded as demented chiefly because of their word-deafness, but who were demonstrated not to be in any true sense insane.

Word-deafness is one of the forms of hearing and speech disturbance from which partial recoveries are frequently and total recoveries sometimes made. In a number of the cases of combined sensory and motor aphasia which I have observed at the Philadelphia Hospital, word-deafness at an early period almost complete, rapidly or gradually disappeared, but not always fully. Many of the patients responded to the last with difficulty or slowness to spoken words. I am referring now particularly to cases which persist as marked instances of hemiplegia and motor aphasia. In the consideration of the medico-legal aspects of word-deafness that patients improve or recover should be constantly borne in mind. The most conflicting testimony might be truthfully given about the condition and the competency and responsibility of an individual, if such testimony was based upon observations made over a period of a few years or even a few months.

The case of the French Professor Lordat, which has become classic in works on aphasia, is interesting in this as in other particulars. After a fever he suddenly lost his powers of speech and was word-deaf. Words fell unrecog-

nized upon his ear, but after many weeks he recovered, resumed his professorial work, and wrote a valuable analysis of his own case. The following case of Schmidt, quoted by Kussmaul, is interesting as showing the characteristic symptoms in a word-deaf case, and also illustrates the fact that word-deafness and high grades of verbal amnesia can in large part disappear :

"A woman, 25 years of age, became suddenly unconscious, during severe straining at stool, ten days after confinement. After consciousness returned she was not paralyzed, but suffered from aphasia and paraphasia. She found words with difficulty or not at all, reversed or mutilated them, said "butter" instead of "doctor", threw out letters and syllables, inserted others, used the infinitive instead of the proper mood, and conjugated irregular verbs regularly. She was thought to be deaf because at first she did not understand a single word. It was soon discovered, however, that she heard a knocking at the door or the ticking of a watch as clearly as a well person, that she could distinguish between two house clocks by the tone, etc. Words on the other hand, as she afterwards stated, were perceived only in a confused murmur. She heard separate vowels and repeated them. When a word of one syllable was spoken in the ordinary way, she did not understand it, but when the different letters were separated distinctly from each other, so that they stood forth in the pronunciation, she was able to repeat the word. With words of more than one syllable it was necessary first to pronounce one syllable distinctly, then another, then the two together, or she would not understand the word. It was the same thing with reading. She studied the words very carefully, and tried to pronounce them at first separately and then together. Recovery took place



slowly. She did not understand short sentences until after the lapse of half a year, and then only when they were pronounced slowly and distinctly. Even at the last there remained some difficulty in speaking."

A word-deaf patient might be able to write a will understandingly; he might retain or soon acquire sufficient powers of speaking to give assent, or dissent or even to express an opinion; he might retain certain powers of pantomime, visual centres and connecting tracts remaining undiseased and pervious, and the motor areas for pantomimic speech not being destroyed. It must not be supposed, however, that his condition would be as high mentally as that of a deaf and dumb patient from peripheral disease as scarlet fever, who had with the aid of vision trained himself in the use and comprehension of sign language. Although secondary atrophy of hearing or speech centres occurs in cases of peripheral deafness, a disturbance of mental equilibrium occurs and to some extent persists in cases of cerebral deafness which is not present in the ordinary deaf and dumb. Cerebral centres and lines of communication are at first untouched in the latter cases, and the visual and manual training which is pursued takes possession of and utilizes everything possible.

Lichtheim records a valuable case of word-deafness from lesion of the cerebral entering auditory tract, a rare form of recorded lesion. This patient, although word-deaf, differed in striking particulars from a case of word-deafness or speech-deafness from lesion of the centre for auditory images. While, for example, he could not understand spoken language, had lost the faculty of repeating, and that of writing to dictation, he preserved intact volitional speech and writing, the understanding of writing, the ability to

copy words, and finally, the faculty of reading aloud properly, these last being lost in cases of auditory centre deafness. He had neither paraphrasia nor paraphria, because the arc uniting auditory, concept, and motor centres was unbroken. This man's available mental power was greater than that of an ordinary case of word-deafness. He was in fact a teacher and journalist, and continued with success the business of writing articles for the newspapers. He could not understand speech, but could noises and other sounds of definite import. He spoke with absolute accuracy, but with a slight drawl; he could find substantives, even complex ones, and proper names; he copied and read aloud correctly and fluently and his intelligence of written language was intact. He copied an I. O. U., written by Lichtheim, and gave it to his wife, remarking "You see, you have money."

A variety of curious problems may be presented by patients suffering from pure word-blindness, or from this and some of its usual complications, as word-deafness, psychical blindness or deafness, verbal amnesia or paralexia. I have already stated for instance, that the word-blind can sometimes write spontaneously or from dictation, or even be able to copy writing which he does not understand. Such matters as the simple signing of a name to a check, to a will or other document are often the points in dispute, and yet the ability to do this is retained in many cases where the patient is not only word-blind, but so completely as to be able to do nothing else but make his autograph. Letters may be understood when words are not. The understanding for figures may be lost or retained. A patient reported by Broadbent—a case which, after a time, fell into my own hands—could not at first tell how many two and two made, but in two weeks learned to add together two low

figures, and rapidly thereafter gained in his understanding of figures. Trousseau has recorded the case of an accountant who could read off the sum 766, figure for figure, but did not know what the figure 7 meant before the two 6s. Proust, cited by Kussmaul, records another aphasic, who, although he could no longer count in words, could add and subtract on paper and even multiply pretty well.

That an individual is not able either to read or to write because of word-blindness, should not absolutely invalidate the writing or signing of a will or other document, although such a patient is not in exactly the same condition as one who has never been educated to read or write, or has lost sight through extra-cerebral disease. The general mental impairment which goes with such disease, the possibility of the existence of hallucinations or delusions, and the disturbance of the equilibrium of thought processes must all be taken into consideration.

Some cases of interest in connection with the discussion of word-blindness and of agraphia are mentioned by Le Grand du Saulle and Bateman. An aphasic, 50 years old, wished to make a will, and desired to leave an old domestic a remembrance of some importance. He made the most strenuous efforts to get together words and express on paper his will in the matter, but the words would not form an intelligible sentence, and the writing was incorrect and in some places undecipherable. This defect of co-ordination, of the will and of movement, could not be overcome, and he died before he could make the will he so much desired, to the grief of the testatrix.

Boucher (de Sancergues) tells of a similar case. In January, 1865, he was called in by Dr. Poinset to see a hemiplegic affected with word amnesia. He wished to



make a will and give a certain sum of money to a relative who had taken great care of him. In spite of the most expressive gestures and pantomime he had great difficulty in making himself understood. He succeeded, however, and the clue found, he was able to carry out his wishes.

I have already referred to the Hoffbauer's, a case of a man, in Munden, in 1843, who demanded of the Hanoverian government to make a will and dispose, by signs, of his property to his wife. His request was written from his dictation, although he could neither speak, read, nor express his thoughts in writing. On the advice of the legal physician Holman, three interpreters took his testimony, and his wife obtained possession of the property.

The proof of the testamentary capacity of a word-blind patient, or the validity of a written instrument alleged to have been prepared by or for him, and having his signature, would have to depend largely upon collateral evidence. If, for example, it could be shown that such a patient had written a short contract, will or other document, and then had had it read to him, and had signified his assent to its contents, and if the evidence was in favor of his general mental stability, his testamentary and general mental capacity should be sustained. If it should be attempted to prove that such a patient had read a document in question and thereby assented to it before signature, the evidence would be against its validity and his capacity. A word-blind patient recognizing his defect, but not being word-deaf, and in possession of his general mental faculties, might have a will or other legal paper written for him, and then read to him, and signify his assent to its contents by gesture, by his autograph, or by his mark. The possibility of deception having been practiced upon the writer or testator in such a

case, should, of course, be taken into consideration, and eliminated.

Word-blindness, like word-deafness, often improves so as to change the visual receptive powers, and possibly the capacity and competency of the patient. The following case of Van den Abeele, cited by Kussmaul, is interesting in this and in other respects.

"A woman, 45 years of age, was struck with apoplexy while in the enjoyment of the most blooming health. After some hours consciousness returned, but she was paralyzed upon the right side and had pain over the left eye; her intelligence was somewhat dull, the memory weak, the speech free. Six weeks later, the paralysis and weakness of memory and intelligence had almost disappeared. Two months after the attack she discovered that she could neither read printing nor writing; she saw the text, distinguished the form of the letters, and could even copy the text, but was incapable of translating the words into spoken words and thoughts. She comprehended pictures and could decipher a rebus; she understood consequently ideographic representations, but not writing. When Van den Abeele published this observation, the patient had already regained the power to read some words of one or two syllables."

Both the visual centre and one or more of its commissures were probably injured.

The following unreported case was seen by me only once, and the history is wanting in details, but it will serve to illustrate some of the points likely to arise in the settlement of problems associated with conditions of word-blindness and verbal amnesia.

The patient was a married woman, 66 years old, who had always had fairly good health, although for several years in

the spring she had suffered with rheumatic pains, and a few years before coming under observation she had passed a renal stone of large size, and a second smaller one two or three years later. In June, 1887, during the first attack of renal colic, she had a partial loss of power in the left arm from which she had never entirely recovered; she also had a scarcely perceptible weakness of the left leg. In June, 1887, she was taken with violent headache and vomiting. The pain was worse at the back of the head at the left side and continued for a week to come and go, after which time she noticed some loss of memory and peculiarity of vision.

Examination showed that she had right lateral hemianopsia without Wernicke's pupillary inaction. Testing her in a variety of ways, it was found she could recognize objects seen, heard, felt, smelled or tasted. Until a short time before the examination, she had been able to recognize persons on the street although she could not name them, but this power of recognition of persons was leaving her. She understood what was said to her. She had four sons and evidently could tell one from the other, but could not correctly name them, just as likely as not calling one by another's name. She understood what was read to her, but could not read, as she did not understand printed or written words. She could sign her name and write a few short words at dictation, although the writing except her name was so imperfect as to be almost illegible, except in the case of a small word like "cat." She could recognize an object by sight, hearing or touch; she could not name it correctly from seeing it, but could do so from touch, or, after it was told to her, she would indicate that she knew the name but could not recall it. She called a stamp held before her a "ticket" or a "letter;" and said she knew what



it was, but could not name it. She called pills, "pencils," but knew what they were used for although she named them wrongly. When a paste bottle was held up before her she named it correctly, but called a postal card a "stamp," although she knew what it was. She called a watch a "key," and said it looked like a key. When some keys were held up before her she said they were "locks", and evidently knew their uses. On holding a pocket-book before her, she could not name it, but named it quickly when she took it in her hand. She called a green stamp, "brown;" a pale blue one, "pink;" a dark red one, "red;" an olive green, "blue;" and red, "blue." She said a "G" looked like an "I." When shown the word "royal," she said each letter was "I." She could not name the separate letters or recognize the word; and did not show that she appreciated her mistakes as to words and letters when she was corrected.

In this case the centre for word-vision and the commissures between it and the concept centres were impaired by disease, and probably also to some extent the concept centres themselves.

The medico-legal bearings, civil and criminal, of verbal amnesia, or the aphasia of recollection, open an interesting field and one not altogether unexplored by writers on disorders and disturbances of speech. It is rarely an isolated symptom. It is frequently associated with apraxia in some of its forms, or with word-blindness or word-deafness or both; it may indeed be combined in the same case with almost all other aphasic affections. Most commonly, as would be expected, it is combined with the sensorial aphasias and apraxias. I have already discussed the question of special naming or concept centres, leaning to the views of those who hold to the aggregation of these concept centres

into a more or less isolated field or zone ; but I do not believe that this concept field is limited to one spot in the sensorial sphere. When our more perfect knowledge of localization is attained, it will probably be found that the concept region of the brain is a comparatively large but connected area, interlacing among various centres for percepts in such a way as to make certain portions of it conveniently intermediate anatomically between particular percept centres and the special motor or emissive centres with which they are most intimately correlated. Lesions somewhat variously distributed and extended will, therefore, give rise to forms of amnesia and apraxia ; and strange symptom-pictures, difficult to analyze and to refer to these lesions, will sometimes be presented to the clinician and medical jurist.

The loss of the faculty of recalling words must interfere to some extent with the acts of thinking as well as with expression. Kussmaul, commenting on several well studied cases, shows that verbal amnesia, and the more profound derangements of memory with which it is often associated, may interfere with the evolution and processes of thought ; and that in some of its severer grades it makes well regulated thinking aloud impossible, although even in these cases the affection is not always incompatible with silent thought. Mental combinations consummated without words, as, for instance, those used in games are not always impossible. He holds, and doubtless correctly, that amnesic aphasia in its more severe forms must render thought mixed and confused, and unless the affection be merely a light form of the aphasia of recollection, it is almost always accompanied by a pronounced diminution of the intelligence. We should not, however be satisfied with a generality like this, important as it may be ; but should, in studying individual cases, separate

the varieties of verbal amnesia and apraxia into classes, based upon a study of the relations of the symptoms presented to the sites and extensions of the lesions on which these symptoms are dependent. Those deep disturbances of speech and thought which are dependent upon large lesions destroying and disrupting various percept and concept centres, and the lines of communication between them, must so weaken and confuse the mental powers as to make sanity and responsibility in criminal, and competency in civil cases, often a matter of gravest doubt.

Many illustrations of forms of verbal amnesia and its most frequent associations have been recorded in the classical treatises on aphasia, and here and there in journals and text-books, but I will only refer to two or three.

Kussmaul cites Bergmann's case of a hind, 40 years old, who was unconscious for four weeks after a severe injury to the head, and then regained his recollection of things and places, but his memory for names was lost. The nouns had disappeared from his vocabulary, but he still had command of the verbs. A pair of scissors he called that with which one cuts; the window, that through which one sees, through which the room is illumined, etc. He had forgotten most of his songs and prayers. He recovered his memory subsequently.

The same author also gives the well-known case reported by Hun of Albany, that of a farrier who suffered from heart disease, and was seized one day with congestion of the brain, which threw him into a state of stupor lasting several days. He recovered consciousness and understood what was said to him, but although his tongue was freely movable he could not find words, and had to make himself understood by signs. He understood words that were said to him but



could not find those necessary to give expression to his thoughts. He could not repeat words that were pronounced before him. When the doctor pronounced the word which he sought he was much rejoiced, but his efforts to repeat it were fruitless. If Dr. Hun wrote it out for him he was able to spell it and could pronounce it after a few attempts. He made for himself a tablet on which the necessary words were written out, and took refuge in this during speaking. Finally he learned to do without it. When he was able to pronounce a word, he was also able to write it.

Bateman<sup>1</sup> records the case of a merchant who had been failing mentally for some time, and had had a "fainting fit," and soon afterwards began to get confused in conversation. He would let objects drop from his right hand, and do awkward things at the table—on one occasion he used vinegar instead of pepper. It was soon observed that he could not write a letter. During the doctor's lengthy interview with him, he never initiated any subject of conversation. When questioned, he got confused, and was conscious of this, saying he could not find words to describe his symptoms. The answers he made, however, were coherent, but in the fewest possible words. He seemed to understand everything that was said, but had to a certain extent lost the memory of words, and would call things by their wrong names—for instance, when the fire was burning particularly brightly he said, "How bright the poker looks." Some one said, "You mean the fire," "Yes," he said, "I mean the fire." He would be thus confused in the choice of words to express his thoughts, and the knowledge of this defect was a source of distress to him. The idea was conceived but the means of communication with the ex-

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<sup>1</sup> Bateman: *Aphasia, etc.*, p. 109.

ternal world did not exist. He complained of numbness in the right arm and leg, and the tactile power of the right hand was impaired.

An autopsy was had, and a cystic and softened area found, which is described as located at the point of union of the middle third with the posterior third of the convex surface of the left hemisphere.

Lichtheim reports in elaborate but important detail, a case of lesion of the paths between both the auditory and visual centres and the concept sphere with an interesting medico-legal experiment. Such a break should give us according to his analysis, loss of the understanding of spoken and written language, with the preservation of volitional speech, which would, however, be paraphasic, and of volitional writing which would be similarly paragraphic; also the retention of the faculty of repeating words, of reading aloud, of writing to dictation, and of copying words, with, however, a loss of intelligence for what is repeated, read aloud, or written to dictation. The case bears out fully this analysis. Verbal deafness was present, but little or no deficiency in the man's vocabulary, although he was in great difficulty when he had to name objects shown to him; he could repeat what was said to him without understanding; he understood nothing printed or hand-written; he could make up letters into words, and could read aloud by spelling, but the sense of the words remained closed to him. His other losses and preservations were in accordance with the analysis just given. This case and that of Hun, illustrated a point which must be always borne in mind when giving testimony, and one to which I have already referred, namely, that improvement in various ways both on the impressive and expressive sides often takes place in aphasic

cases. Word-deafness, paraphasia, paraphagia, and intelligent comprehension changed markedly for the better; but even after much improvement, writing to dictation remained obscure. Lichtheim dictated to him an I. O. U. for 20,000 francs, which the patient wrote down and allowed the doctor to put in his pocket without giving the least sign of emotion. In less than a month, however, when much greater improvement had taken place, the experiment with the due bill no longer succeeded.

Starr<sup>1</sup> has reported several interesting cases—one of paraphasia progressing to total aphasia, in which the patient was anxious to give directions about financial affairs and about his will, and although he knew what he wished it was impossible for others to learn his desires either by speech or writing. Another patient, a physician, would sometimes write the name of one drug in a prescription for another, and was also, likely to write the quantities wrong, so that he never failed to read his prescriptions several times. This shows another peculiar medico-legal phase which such a subject may have.

The discussion already had and illustrated by these cases makes it unnecessary to go in detail into each peculiar variety of conduction or commissural disorder of speech. The medico-legal bearings of alexia, dyslexia, paralexia, paraphagia, and paramimia, become evident in the general discussion of paraphasic disorders.

Commonly and correctly, mental integrity and competency, whether considered with reference to the deprivation of liberty, the care of an estate, the making of a contract, the preservation of testamentary capacity, or other questions which may arise in connection with aphasics, are

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<sup>1</sup> Starr: N. Y. Medical Record, October 27, 1888.



not regarded as affected by the existence of motor aphasia even when associated with considerable paralysis, and perhaps even with other forms of aphasia. I am, of course, now speaking of those forms of motor aphasia which are not part of or imposed upon insanity of definite type. Each such case should, however, be studied on its own merits, and the evidence pro and con should be carefully sifted. Ray, Bastian, Ferrier, Hamilton, Hughes, Bateman, and many others, have expressed the opinion that aphasia from destruction of the motor speech centres does not of necessity mentally incapacitate the individual, and many cases have been recorded by these and other authors, to illustrate the retention of mental power by such patients. One of the general conclusions of Kussmaul is that "mental combinations which bear upon business affairs, and can only be set in operation by the aid of speech, are at times even admirably carried out notwithstanding the existence of a high degree of ataxic aphasia."

Even for motor aphasics, however, general conclusions are not sufficient. Such cases separate themselves into several classes according to the site and extent of the brain disease producing them. A sharp distinction must be made with reference to all aphasics, but particularly those in which the motor type predominates, between having mental power and being able to make known this possession to others; between the capacity to wish and will certain things, and the ability by speech, writing, or pantomime to show the desire and intention. In pure motor aphasia, due either to lesion of Broca's convolution, or the utterance centres at the base of the central convolutions or of both, the patient is usually able to make his wishes and purposes known. Usually such aphasia is associated with

agraphia, but expressive pantomime is likely to remain in some degree so that the patient can often communicate intelligibly with others. The impressive and concept spheres of language are not interfered with, and if any clear means of expression and communication remain, the capacity and competency of such a patient\* will be scarcely questioned. Cases which illustrate this standpoint are to be found in all articles and treatises on aphasia and need not be quoted. Even cases of pure motor aphasia, however, may be sometimes misunderstood, if care is not taken in communicating with them, as any defect in the mechanism of thought and expression, renders the human being, fallible even in health, liable to make mistakes and to be misapprehended.

Bastian,<sup>1</sup> in the following quotation, indicates an important matter—the bearing of the personal equation of the aphasic upon the question of mental impairment,—and he also in it tersely expresses the status of most cases of pure motor aphasia and agraphia:

“In pure agraphia thought is least of all interfered with. In pure aphasia it is more or less hampered, because the non-revival of glosso-kinaesthetic impressions seems to interfere somewhat with the free and thorough revival of words in other functionally related word centers, even during the processes of silent thought. Still in regard to both these forms of word revival, namely, of sensations accompanying the pronunciation and the writing of words, it should be borne in mind that for most persons no very definite recollection is possible, although unconscious memorial recall may occur with unfailing regularity, so as to lead to their proper sequences in the form of speech or writing. It is quite possible that the degree of impairment of thought in

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<sup>1</sup> Bastian: *Brit. Med. Jour.*, Vol. II, 1887, p. 934.

different individuals suffering from pure aphasia may be subject to some variation in accordance with a varying relative importance (for such different individuals) of revived kinaesthetic impressions as compared with revived auditory and visual impressions. (Bernard, *De l'Aphasie*, p. 48.)"

Motor agraphia is usually associated with aphasia of the motor type, and, like the latter, is also variously combined with conduction or even conceptual and sensorial affections, and its importance will of course depend largely upon its combinations and complications.

Cases of either motor aphasia or agraphia, of pure type, and unassociated with paralysis, are rare. By far the most common association is motor aphasia, or motor aphasia and agraphia, combined with types of conduction aphasia, and well marked hemiplegia. These hemiplegic aphasics easily separate into three classes with reference to the presence and persistence of the aphasia: (1) Cases in which the aphasia, complete or nearly complete at first, in the course of days, weeks, or months, totally or almost totally disappears; (2) Cases in which the aphasia is nearly or quite absolute, and remains permanently; (3) Cases which improve slowly, and largely through a tedious process of training and re-education. The nervous wards of the Philadelphia Hospital almost always contain some cases of these different types.

Those cases of the first category, in which the hemiplegia persists although the aphasia passes away, are probably most frequently from lesions of the internal capsule, at a point well removed from the cortex, and compressing, or only partially destroying the fibres for the facial centres. The patients recover their speech because of the escape in large measure both of projection and commissural fibres. The mental integrity of patients of this class, after the apoplectic

period, is always retained, and is, as a rule, soon easy of determination. The ability to write and to express thought by pantomime is fully preserved on the non-paralyzed side, and to some extent when the paralysis is not absolute, the paralyzed limbs may be made to do service in expression.

In the second class of hemiplegic aphasics, in which the aphasia remains nearly or quite absolute and permanent, the determination of the mental status of the crippled individual is often a matter of great difficulty. I have seen autopsies on a number of these cases, as also on cases illustrating other varieties of aphasia. Generally the lesion is one of large size involving and destroying both internal and external capsules, and to a greater or less extent both striate bodies and the insula; in other words, one which according to our best lights, disrupts entirely the inter-nuncial tract for speech, and also largely the commissures, both direct and indirect, between the sensorial and motor centres, or between the latter and the centres for concepts. This lesion, moreover, is often so close to the cortex for speech as to destroy the commissures which would otherwise connect the left hemisphere with the right through the corpus callosum. Although motor aphasia and motor paralysis of face and limbs are prominent, the case is in reality one of badly mixed type, and presents phenomena at first sight as confusing to the investigator as the disturbances of thought and speech are to the suffering patient. It is in such a case particularly that a vast difference exists between the possession of thinking power, and the ability to communicate with others and make them appreciate this position. As a rule, writing and pantomime are lost in equal degrees with speech; but every means should be exhausted and every channel of communication tested,



before arriving at a decision, and even then such decision might be incorrect or unjust.

In the third class of cases, those which improve slowly and tediously, but nevertheless make great advances, the lesions, while large and similarly situated, have not been as extensive as those present in the second class. In the third class, also, the original capacity, the education, and the strength of mind of the aphasia may play an important part. The ability to exhibit capacity and competency will, of course, vary at different stages, as the patient progressively improves.

The certainty and uniformity with which an aphasic expresses even simple assent and dissent, by word or gesture, when questioned with reference to his wishes or with reference to facts, must be taken into full consideration. During the preparation of this paper, some cases of aphasia, which were certainly not word-deaf or only partially so, were carefully tested at the Philadelphia Hospital, with reference to their ability to certainly and consistently exhibit assent or dissent to questions relating to matters easy of comprehension. The results were variable and sometimes contradictory, puzzling, or amusing. One patient whose only vocabulary was the word "no," evidently used this word to express both assent and dissent, but accompanied its use with such an appearance of countenance, and such gesticulation as to make it impossible to decide as to her real intention. Sometimes she seemed to instantly and clearly comprehend what was asked, and showed this by her countenance, but oftener her look was one of annoyance, confusion, or impatience, rather than of either assent and dissent. Another patient seemed to understand most of what was said to her, particularly at first, but after a few queries she became

emotional, excited, confused, and decidedly impatient of investigation. A third, whose accompanying paralysis was less complete than that of the other two, but whose vocabulary was chiefly confined to the word "no," assented or dissented by means of facial expression, nodding her head and pantomime of fair correctness, and yet on continuing the examination frequently made foolish and absurd assents and dissents. A fourth patient possessed expressive gesture and pantomime in a much higher degree. She not only understood all that was said to her, but within the limits of her original capacity, education, and experience could so far as her unparalyzed members would permit, express her meaning clearly and distinctly by the most significant pantomime. With the instruments which nature had left unimpaired she could promptly indicate what she wished to convey, and yet she was tremendously crippled so far as ordinary speech was concerned, and had as a most common method of vocal reply a routine, recurring utterance "come-on-to-nong." Her pantomime had high propositional value. In studying her pantomimic powers, for instance, I asked her age, and with her unparalyzed left hand she opened and shut it fourteen times, the movement becoming a little slower and more emphatic as she approached the end. She told us in this that she was seventy years old, and when I said to her you mean you are seventy years old; she nodded her head "yes" in a most emphatic manner. I asked her how long she had been sick, and with her hand she promptly told me fifteen years. I said to her you mean twenty, she shook her head "no", and again opened and shut her hand three times to indicate fifteen.

The explanation of some of these cases is that although the receptive centres are sound, owing to the invasions of

the disease from the motor side of the brain, the association channels between the receptive and emissive centres are impaired or functionally inactive, and the patients seem to sink into a condition of language or speech fatuity from disuse, and carelessness as to speech. Even some patients who retain a considerable vocabulary and have only a moderate degree of paralysis, who clearly understand the import of questions put to them, and are clearly capable of certainly and consistently assenting and dissenting, show undue emotionality from trivial cause, and a weakness of grasp upon the ideas presented. Mixed aphasics, particularly if they have had little education or original brain capacity, who develop conditions of confusion, obstinacy, and impatience, probably do this in part as the result of the infrequent exercise of their mental powers through the vehicle of language.

Some knowledge of the most frequent methods of combination in the mixed aphasias will be of service in attempts at the solution of the medico-legal problems of speech. Brain lesions, usually vascular, are likely to extend over areas and tracts which are associated in functioning, and have, in accordance with a general law, a more or less common source of blood supply. Different varieties of psychological blindness and deafness, partial or complete, may occur together; motor aphasia, agraphia and amimia, partial or complete, are usually associated with paraphasias; and frequently partial word-deafness is found in conjunction with one or several of the varieties of motor defect in expression. Total sensory and motor aphasia is sometimes observed, and is of course accompanied by the completest form of speech, graphic and pantomimic disorder—complete aphasia, agraphia and amimia.

Close studies of these compound cases will doubtless enable us after a time to better separate them into different classes guided by localization facts and theories; to distinguish cases in which either the direct sensori-motor, or the concept-motor commissures, or both, or the hemispheric commissures, are damaged at the same time that the lesion attacks or not cortical centres and cortico-bulbar tracts. The path from concept to motor, or from auditory to motor centres, is certainly frequently broken and probably most frequently near the motor end of the line. Pure or almost pure cases of concept-motor aphasia have been reported in considerable number.

Disorder of speech, the result of damage to the so-called internuncial fibres or tracts between the cortical and bulbar centres, is of the nature of an *anarthria* or disturbance in articulation, rather than a genuine aphasia. This speech defect I have already described under the name of pseudo-bulbar or labio-gloso-pharyngeal paralysis of cerebral origin. The most marked examples of it are due to bilateral lesions or degenerations. Whether unilateral or bilateral, all cerebral centres and commissural channels are undisturbed; volitional speech, word repetition, and reading aloud are lost or greatly impaired simply because of interruption to speech impulses in the out-going roadways below the cortex. Mental capacity and competency need not be in the least diminished, as the patient preserves his receptive and conceptive faculties, and unless through great accompanying paralysis of face and limbs, large powers of communication by means of pantomime and writing.

It is necessary both for their positive and their negative importance, to briefly consider the various disorders of speech from infra-cerebral disease, such as, bulbar palsy,



insular sclerosis, and focal lesion between the cord and cortex, a large class of affections sometimes described under the general name of *anarthrias*.

In true *bulbar paralysis*, in which the changes in articulation are sometimes slight, and at others so complete as to almost abolish articulate speech, mental soundness, if the cases are uncomplicated, is not in any degree impaired, and various methods of expression and communication remain.

The method of progressive deterioration in the patient's speech, with the continued retention of mental integrity, is beautifully described by Kussmaul<sup>1</sup> in the following paragraph:

"As in the course of these degenerative changes one ganglion cell after another is slowly destroyed in the bulbar nuclei we perceive consonants and vowels successively crumbling away, as it were, from the patient's speech, while his intellectual powers may be perfectly retained. His words grow more and more indistinct and mutilated, his stammering passes into an unintelligible muttering, until at last he is only able to emit grunting noises, and perhaps not even these. So long as his hands and arms escape paralysis, he continues to communicate his feelings and ideas by writing. The disorder of speech is invariably limited (when there is no cerebral complication) to the power of forming articulate sounds; the stammering may pass into complete loss of speech but it is never associated with a blundering enunciation of syllables (*Sylbenstolpern*), or with aphasia. *The degree in which the formation of syllables and words is interfered with is always proportionate to the disorder of literal phonation*; the architecture, so to speak, of the words is not impaired; they continue to be correctly put

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<sup>1</sup> Kussmaul: *Op. cit.*, p. 654.

together, though the materials—the elementary sounds of which they are made up—may be inadequate.”

The various but allied forms of speech disturbance which result from insular sclerosis, and focal lesions of other sort in the intra-cerebral tracts, are not necessarily accompanied with any loss of mental strength or clearness, although, as is well known, mental changes are somewhat common in this affection because of its diffuse and destructive character. It is scarcely necessary to refer to the peculiar varieties of speech defect found in this well known disease, which have been well described under a variety of names such as drawling, syllabic, scanning, staccato, and hesitating.

The study of speech disturbances which are associated with the various forms of insanity, have of course great importance in connection with the particular topic of this paper, but would need an article of considerable length for their full discussion. I can scarcely more than refer to them.

As has been said by Dr. Hughes, and as even a careless study will show, aphasia dissociated from marked mental impairment is of more frequent occurrence than in association with evident insanity; so that in a case of suspected mental disease the burden of proof will fall on those who might maintain the co-existence of mental aberration, and the legal presumption would be in such a case in favor of sanity. While this is true it must not be lost sight of that aphasia is found among those who are clearly insane. Broca's first two cases were observed in an institution devoted to the treatment of mental disease, and not a few of the recorded cases have been observed in hospitals for the insane. Every physician in charge of an institution of this character, should carefully inquire into the history and symptomatology of cases showing special forms of speech

disturbance. The two cases referred to by Kussmaul will be remembered—patients suffering from aphasia, but not insane, and yet confined in an asylum.

Probably in paretic dementia, and senile dementia, the study of speech defects has more diagnostic and medico-legal value than in any other of the well recognized types of insanity. In the early stages of the former disease it may serve to make clear the true nature of the case; in the latter affection it may be of decisive importance in the determination of questions of competency. In mania, melancholia, paranoia, katatonia, idiocy and imbecility, the peculiarities of speech might have some bearings upon medico-legal problems in connection with the diagnosis of the nature, depth, or stage of the affection.

About the hallucinations and delusions among aphasics much of interest might be written. The hallucinations are usually of hearing and sight, and may in not a few cases be dependent upon irritation of sensory centres; while various delusional states may have their origin in disease both of sensory and concept centres, or in the disruption of various lines of communication between the different areas of the brain concerned with speech.

A consideration might be here in place of the inhibitory speech centres, or centres for abstract thinking, which I have included in the list of centres taking part in the phenomena of speech, but which are not usually so included. They are probably located in the prefrontal region. Hughlings Jackson,<sup>1</sup> Mercier, and others hold that anterior to the Rolandic motor region, are the highest motor centres, and that these with corresponding sensory centres, make up the highest level of the central nervous

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<sup>1</sup> Hughlings Jackson, M. D., New York, Med. Rec., August 31, 1889, Vol. xxxvi., p. 227, 228.

system. Jackson contends that these higher centres represent all parts of the body; and Mercier that the highest nerve processes which form the substrata of the most elaborate mental operations, represent at the same time not only the most elaborate forms of conduct and muscular movements, but also every part of the organism in some degree. Accepting such doctrines, speech, like every other function of the body must, of course, be influenced by anything which affects these highest centres. Affections of speech, however, due to lesions of these pre-frontal areas are a part of the general mental impairment which goes with the destruction of this region; and the mental status of the individual will be recognized as much by other phenomena as by those of speech.

The following quotation from Hughes<sup>1</sup> may serve to cover some points with reference to the medico-legal aspects of affections of speech, not otherwise included in the present paper:

"The hysterical, the choreic, the cataleptic, the emotional, the hyperaemic, and reflex forms of speech failure have neither distinct clinical significance, nor are they often likely to have medico-legal importance, separate from the diseases with which they may be associated. They need not, therefore, be considered here, and we mention them mainly to exclude them, as we likewise do the speechlessness of nightmare. Marc and others, however, have noted the temporary impairment of the mental faculties in chorea, and the defect in the speech power in this disorder, is, probably, as much dependent upon the cerebral disorder implicating the speech centre along with other portions of the cortex, as on disturbance of the motor area for the organs of articulation.

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<sup>1</sup> Hughes: *Alienist and Neurologist*, July, 1880, Vol. I, No. 3, p. 315-316.



There are circumstances, too, under which aphasia occurring in the course of cerebral hyperaemia, might have corroborative significance in a question of doubtful sanity, but if we were to discuss all these possibilities, we might transcend the limit of the evening. We may say, however, in order to be understood as not underrating the matter, that such a degree of general cerebral congestion, if persistent for any length of time, as would paralyze the speech co-ordinating power, would probably also simultaneously impair the higher psychological faculties.

"The occasional aphasia of drunkenness has never been pathologically defined with sufficient distinctness. It is often, no doubt, a sort of incomplete and transient glosso-labial paralysis, like the other forms of inco-ordination seen in inebriates, or the peculiar and more permanent defects of speech displayed by general paralytics. This latter form of speech defect, also, need not be considered apart from the graver disease with which it is associated, and which has other characteristic signs. Nor need we note, any of the glosso-plegias causing speech defect."

"The momentary speechlessness, sometimes occurring in persons overcome by fright or profound surprise, at being the unwilling or unexpected witnesses of some horrible tragedy, might possibly have to be considered where an innocent person is indicted as *particeps criminis* from the fact of his being present, and uttering no protest or cry of alarm; but, in such cases, the proper explanation, I believe, has always been, and is still likely to be, made and received; so well understood is the fact, by the common mind, that intense fear may for a time, paralyze the power of speech, as well as of motion."

The disease known as *echolalia*, or *coprolalia*, and by various other names, might have some medico-legal

importance. This is an affection in which convulsive or choreic movements are associated with a sudden explosion of speech. The patient with a grimace, contortion, or violent movement of some kind, suddenly bursts into an obscene, profane, or absurd expression. This expression may be the echo of something overheard, hence the name, echolalia, or it may be a spontaneous outcry. It is conceivable, although I do not know that it has happened, that such a patient might be arrested for the use of obscene or insulting language in the presence of others, and physicians and jurists should therefore bear in mind that such a disease exists, and that the impulse to burst forth in this way is sometimes irresistible. It is not simply an hysterical affection, controllable and curable, but is a true monomania, the affection of speech being beyond the patient's volition. One patient of mine, a boy about twelve years of age, at times, without warning, would in a street car or other public place as well as in private, suddenly give utterance to a filthy expression two or three times, accompanying it with a violent movement of the head, shoulders, and one arm. Another patient, a lady of good education, and fine personal appearance, would in the midst of a conversation, or on introduction to another, or at any most inopportune time, suddenly, with violent gesticulation, shout, "Damn it!" "Damn it!" "Damn it!" Gilles de la Tourette, Dana, Seguin, and others, have reported numerous cases of this kind, and the affection certainly has a possible medico-legal aspect.

The association of aphasia with epilepsy, and the occurrence of what might be termed an epileptic or epileptiform aphasia without spasm, or without the usual type of convulsion with unconsciousness, is a phase of one subject which

has some important medico-legal bearings. Disturbances of speech in connection with epileptic attacks are, of course, very common, and may occur before or after, or even during a fit, when loss of consciousness is not profound. Sometimes a seizure is preceded, as is well known, by muttering or confusion of speech, by "thickness of tongue", by the utterance of certain expressions, by an unusual talkativeness, or by an absolute inability to talk. The aura of the attack may be aphasic in various ways. They are so well known and they have been so often studied and detailed, that it is not worth while to go in detail into the numerous perversions of speech and thought which so commonly follow epileptic attacks; they are simply the evidences of the exhaustion and disorder of the cerebral mechanism which has resulted from the terrible explosion of nervous energy which had occurred during the fit. In addition to these affections of speech, however, are others of rarer occurrence, and of special interest. In some of these the aphasia itself is the fit, just as we may have instead of the motor paroxysm, which is the usual epileptic manifestation, a substitutional attack of mania, of vertigo, of pain, of running, or of other automatism.

The nature of such cases of sudden loss or abrupt disturbance of speech is sometimes obscure and needs careful investigation. In the first place, the affection might be absolutely assumed or malingered, as, for instance, where it is part of a scheme for dissimulation of insanity, or to present a more serious picture in a litigation case; secondly, such loss or disturbance of speech might be neuro-mimetic or hysterical, but not absolutely simulated; and, thirdly, it might be the result of a genuine discharge of cortical or ganglionic areas of the cerebrum, or the result of a local cerebral ischæmia, and therefore properly to be classed as a epileptic phenomenon.

Many years ago I was sent for in haste to see a young woman, whose virtue was not equal to her appearance. She had suddenly become totally speechless, causing great consternation to her lover and the other residents of the house. No facial or limb paralysis could be made out and she had none of the usually associated phenomena of either an apoplectic or an epileptic attack. I learned that this abrupt loss of speech had come on after a quarrel with her lover, in which both he and she had exhibited violent rage, although no physical force had been used. In this case it was somewhat difficult to decide, but I concluded that the case was one of hysterical aphasia, the result of nervous excitement attendant upon the quarrel, and that the patient would soon recover, which she did as abruptly as she had been attacked. A form of mutism is, as is well known, quite common as a phase of hysteria, but the cases here referred to are those in which the loss of speech comes on as a sudden attack.

The presence or absence of speech disturbances with conscious epileptic automatism—which is perhaps a somewhat contradictory expression—may have some medico-legal importance. Stevens and Hughes<sup>1</sup> have reported such a case, and many more as similar are to be found in the books and journals. This patient, a physician, on several occasions got up in the night, dressed himself and went out of doors to look at his stock, or perhaps simply without any purpose. During part of the time at least he realized that he was doing something which he should not although conscious of what was occurring. He had had many real epileptic seizures preceding these attacks. He was put

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<sup>1</sup> Stevens and Hughes: *Alienist and Neurologist*, April, 1880.



under treatment and greatly improved, but on another occasion in a similar seizure he was asked a question which he understood perfectly but could not answer, although he continued to talk for about twenty minutes attempting to explain what he was trying to say. The night following this incident he had a severe epileptic attack. He afterwards could recall much of what he had said and done when in this confused, automatic state. The reporters of the case ask what would have been the result had some acts been done by this same patient during his apparently conscious somnambulism, something, for instance, involving him in a pecuniary obligation, as the signing of a deed, or the doing of any act making him liable to the law? Every neurologist of experience has seen similar cases.

In a discussion of the medico-legal aspects of aphasia, the *simulation of dumbness* by criminals or others should not be overlooked, as it is in fact a simulation of aphasia, or in some cases of both aphonia and aphasia. It may be resorted to by criminals feigning to be insane in order to escape the consequences of their crimes, or by prisoners to avoid duties or punishments. Ray<sup>1</sup> mentions the case of a man who had cut off his wife's head and had or assumed the demeanor of an imbecile. Among other manifestations he carried a piece of wood about with him which he represented by signs to be a sword. He would not speak or answer any questions except by now and then repeating the word "cabbage" without any meaning. Another French homicide, who was adjudicated insane, would not answer questions although he heard and understood them. Jean Gerard murdered a woman at Lyons, in 1829, and immediately after his arrest ceased to speak altogether, and appeared to be in a state of

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<sup>1</sup> Ray: Medical Jurisprudence of Insanity.

fatuity. The use of the actual cautery for several days brought him to terms, and after some urging he spoke declaring his innocence of the crime with which he was charged. A man convicted of pocket picking and sentenced to four years penal servitude, on hearing the sentence fell down in the dock in a fit of apoplexy, and when removed to the jail was found to be hemiplegic and apparently mindless, but whether he was aphasic is not mentioned. He subsequently effected his escape in a manner which made it clear he had been simulating. An Italian criminal apparently became insane soon after he had been betrayed by his accomplices, and to any question whatever, he merely uttered the words, "book, priest, crown, crucifix." Many other details are connected with this case, but it was finally decided that he was insane. It is not impossible that he may have been insane and also simulated some of his symptoms.

In suspected shamming of dumbness or of aphasia, the genuineness of the phenomena should be patiently tested from the standpoint that the defect of speech might be due to the mental state, that is, an aphrasia or dysphrasia, and also from the standpoint that it might be primary, that is, a true aphasia or dysphasia. As far as possible, the test for the determination of the presence of insanity or its simulation should be applied, resorting to surprises, strategy, and perhaps even in some cases to anæsthesia or to stern methods. The apparent aphasia or aphrasia should also be tested and studied as would any ordinary case of this affection in the same. Word-deafness, word-blindness, alexia, dyslexia, motor aphasia, and agraphia, should, if possible, be investigated and included or excluded; and the existence or non-existence of accompanying paralysis, anæsthesia, hemianopsia, etc., should be given full weight.

Let me say a few words in conclusion about the methods of examining patients suffering from aphasia and other affections of speech, for medico-legal, or indeed for any practical purpose. Such an examination to be of real value should be carried out systematically and should be of the most thorough character. Reports of trials in which aphasia has been the issue, or of papers based upon a study of medico-legal cases of this kind, show how meagre, uncertain and unsystematic, have often been the investigations of patients whose mental state has been the issue upon which has hung the disposal of large fortunes.

Starr<sup>1</sup>, who has written various important papers on aphasia, in one of them makes the following practical suggestions with reference to these examinations:

"To examine an aphasic thoroughly, it is necessary to test:

1. The power to recall the spoken or written names of objects seen, heard, handled, tasted, or smelt.
2. The power to understand speech and musical tones.
3. The power to understand printed or written words.
4. The power to speak voluntarily. Does he talk clearly? Does he mispronounce words? Does he misplace words? Does he talk jargon?
5. The power to repeat a word after another.
6. The power to read aloud. Does he understand what he reads?
7. The power to write voluntarily. Can he read what he has written?
8. The power to write at dictation.
9. The power to copy.
10. The power to recognize the use of objects seen, heard, felt, tasted, or smelt."

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<sup>1</sup> Starr: Apraxia and Aphasia. Med. Rec., New York, October 27, 1888.



The investigator should constantly keep before his mind that he is to determine not only what the patient has lost, but what he retains of language and of thought.

"The comparative study of nervous diseases," says Jackson<sup>1</sup>, "the study of them as dissolutions—is a process of generalization. To attempt this generalization without prior careful analysis of the things concerned, needing minute clinical study of individual cases, is not likely to lead to anything of permanent value. To compare and contrast the mere local lesions and the symptoms directly dependent on them only is not good method. It is one merit of the method I am urging that it deals not only with the local lesion—with that, I mean, which disease (in the strict sense of pathological change) causes—which alone is dissolution, but also with the healthy rest; that is, it takes into account the evolution going on in the undamaged remainder of the nervous system. The full symptomatology of a case of ocular paralysis is not to be intelligently stated even unless activities of healthy centres, including the highest (all centres above the peripheral lesion) are considered; and a case of insanity is not properly analyzed unless undiseased parts of the highest centres and all lower centres are considered."

Lichtheim, in the admirable paper so often referred to by me, gives a series of synopses in connection with his schema of types of aphasia. Such synopses, showing at a glance, what is lost and what is left of speech and thought, are of great value for the purposes of methodical examination.

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<sup>1</sup> Hughlings Jackson, M. D., New York, Medical Record, August 3 1889, Vol. XXXVI., p. 226.







